FOOD TECHNOLOGY ABSTRACTS VOL 21,1986

July - Dec 1986

Volume 21 No.7

July 1986

ISSN 0253-4924

Food Technology Abstracts

Central Food Technological

National Information System for Science and Technology

FOOD TECHNOLOGY ABSTRACTS

Volume 21 No.7

July 1986

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GENERAL

1686 MANSUR (RT). The meal, ready-to-eat (MRE) of the future. **Activities Rep. R & D Assoc.** 37(2); 1985; 18-20
Discusses: Meal ready-to-eat (MRE); MRE improvement program and plan; phase I-MRE VI changes; and phase II-MRE-VI changes. BSN

1687 SHULTS (GW). Innovative processes for dehydrated products for future rations. **Activities Rep. R & D Assoc.** 37(2); 1985; 56-7

1688 ADSULE (PG). Modernisation of food industries in the small and tiny sector in India. **Indian Food Ind.** 4(4); 1985; 142-7
Discusses: promotional agencies for small scale sector; status of industries and modernisation; quality control; marketing; and research and development. BSN

1689 LABUZA (TP). Industry's role in designing new products for health and diet: Scientific role in designing new products for health and diet: Scientific and regulatory constraints. **Cereal Food World.** 30(12); 1985; 827-30

1690 SAUNDERS (DL). Overcoming technology gaps to meet the food production and feeding challenges of the year 2000. **Activities Rep. R & D Assoc.** 37(2); 1985; 1-3
Discusses: Food preservation and biochemistry; ration development; human factors; and computer simulation. BSN

FOOD PROCESSING AND PACKAGING

Processing

1691 BRENNA (O). Study of some parameters of preblending. **Ind. Aliment.** 24(9); 1985; 688-92

1692 MEIER (PM). Ultrafiltration applications. **Activities Rep. R & D Assoc.** 37(2); 1985; 4-11
Discusses: basic principles; food and beverage applications; economics; future advantages and disadvantages. BSN

1693 KOOIJ (JG). Update of International programs on food irradiation. **Activities Rep. R & DAssoc.** 37(2); 1985; 58-62
Discusses: International agreement on standardization of irradiated foods; codex general standard for irradiated foods-scope and provisions; and international cooperation in the field of food irradiation. BSN

1694 COHEN (E) and SAGUY (I). Statistical evaluation of Arrhenius model and its applicability in prediction of food quality losses. **J. Food Process. Preserv.** 9(4); 1985; 273-90

Packaging

1695 KONTOMINAS (MG), DEMERTZIS (PG) and GILBERT (SG). Sorption of vinylchloride onto polyvinylchloride by classical partition and inverse gas chromatography: Comparison of two methods. **J. Food Process. Preserv.** 9(4); 1985; 223-34
Sorption of vinylchloride onto polyvinylchloride was studied

using both classical partition and inverse gas chromatography. The effect of temperature, polymer particle size and monomer concentration were particularly examined. Data from both methods showed that at very low concentrations, the monomer was strongly retained by the polymer with equilibrium distribution in favour of the polymer increasing as concentration decreased. Increase in temperature resulted in increase of the kinetic energy of VCM molecules hence desorption was thermodynamically more favoured than at lower temperatures. Decrease in polymer particle size resulted in a greater binding of the monomer by the polymer, due to uncovering of additional active sites of the polymer. Values for the thermodynamic parameters calculated using the two methods were in fair agreement. Results were in accordance with the active site hypothesis. AA

1696 GILCHRIST (JE), RHEA (US), DICKERSON (RW) and CAMPBELL (JE). Helium leak test for micron-sized holes in canned foods. **J. Food Prot. 48(10); 1985; 856-60**

A helium leak test for canned foods was developed to provide a more sensitive method than existing ones and to reduce dependence on operator judgment for detecting leaking cans. The test forced helium through holes into cans filled with foods. Can headspace gas was sampled, and the helium content was measured by gas chromatography. An approximately linear ($r = 0.81$) relationship existed between the helium content of the headspace and the hole size in the can. The method detected holes as small as 1 μm in diameter (the smallest hole tested). Measurements of direct holes and dented seam holes in metal cans indicated that most holes were smaller upon retesting. However, some seam openings did become larger. Some holes closed completely, probably as a result of clogging by particles. Cans with direct holes of known size were processed in a canning retort, and the cooling water was inoculated with ca. 10^6 bacteria/ml. Cans with holes greater than 5 μm became contaminated as exhibited by gas production during incubation at 37° C. The helium test was compared with two modified conventional leak tests. When comparing cans with direct holes of known size, there was no difference between the methods. However, when comparing cans with leaks caused by dental seams, the helium test was found to be the most sensitive method for detecting leaks in cans of food. In order of their sensitivity, the tests for leaking cans were the helium test, the modified fluorescent dye test, and the modified vacuum test. AA

1697 BERGWALL (LR). Aseptic packaging: The impact of high technology. Confructa. 29(3); 1985; 234-43

1698 NELSON (PE). Overview status of aspetic processing and packaging in the U.S. **Activities Rep. R & D Assoc. 37(2); 1985; 27-9**

1699 SCHOLLHAMMER (L). Aseptic filling of bag-in-box. **Confructa. 29(3); 1985; 229-33**

1700 MATTHEWS (G). Aseptic bag-in-box technology. **Activities Rep. R & D Assoc. 37(2); 1985; 30-33**

1701 DAHLGREN (WH). Equipment for packaging aseptically or packaging for post sterilization with high barrier plastic containers. **Activities Rep. R & D Assoc. 37(2); 1985; 52-5**

1702 MARCY (J). High barrier coextrusions for shelf stable plastic containers. **Activities Rep. R & D Assoc. 37(2); 1985; 47-51**

Discusses: Packaging milestones; packaging materials milestones; degree of protection required by various foods for a 1 year shelf life at 25 C; permeability rates of main polymers used in packaging; other

factors to be considered; and co-extruded plastic structures. BSN

1703 FISHER (JP). Technology and marketing applications of lidding materials. **Activities Rep. R & D Assoc.** 37(2); 1985; 42-6

A brief resume on technology and marketing problems associated with new types of plastic packaging materials like, PET bottles for soft drinks and coextruded plastic containers for ketsup and barbeque sauces. BSN

1704 SADLER (G). Five major factors affecting the amount and distribution of oxidation in aseptically processed foods in oxygen permeable containers. **Activities Rep. R & D Assoc.** 37(2); 1985; 38-41

Discusses: dissolved and entrapped oxygen; headspace oxygen; permeation; diffusion of oxygen in foods; and oxygen composition. BSN

1705 SALAME (M). New barrier materials for packaging. **Activities Rep. R & D Assoc.** 37(2); 1985; 34-7

Discusses: definitions; barrier polymers; O_2 permeation of barrier and nonbarrier polymers; other factors; water barrier; dilute solution absorption testing; and water permeation of barrier polymers. BSN

FOOD ENGINEERING AND EQUIPMENT

1706 SAMPLE BELTING Co. Conveyor belts for food products. **Ind. Aliment.** 24(9); 1985; 704-12 (Italian)

This article covers the following aspects: (1) standards relating to belt conveyors for food products; (2) chemical action of the product and the choice of covering material; (3) conveyor belts for the food industry,manufactured by SAMPLA BELTING; (4) technical note on transport of food materials by conveyor belts. KMD

ENERGY IN FOOD PROCESSING

Nil

FOOD CHEMISTRY AND ANALYSIS

1707 CHIRIFE (J), RESNIK (SL) and FERRO FONTAN (C). Application of Ross' equation for prediction of water activity in intermediate moisture food systems containing a non-solute solid. **J. Food Technol.** 20(6); 1985; 773-9

This work investigates the use of the Ross (1975) equation for the prediction of water activity (a_w) in aqueous electrolyte or non-electrolyte solutions to which a non-solute (casein) was added. Water activity of the ternary mixtures (casein-water-solute) was in the range of $a_w \simeq 0.85-0.90$ which is of interest for the development of intermediate moisture foods for human consumption. It was found that the use of Ross equation coupled with a correction for the water strongly bound to casein gives good predictions of a_w. AA

1708 HAYAKAWA (S) and NAKAI (S). Contribution of hydrophobicity, net charge and sulphydryl groups to thermal properties of ovalbumin. Can. Inst. Food Sci. Technol. J. 18(4); 1985; 290-95

Coagulability and gel strength of ovalbumin measured after heating 0.5% and 5% solutions, respectively, were correlated to

anilinonaphthalenesulphonate hydrophobicity (ANS), zeta potential (ZP) and sulphydryl content (SH). Significant correlation to coagulability was obtained with the regression equation : [coagulability] = 0.476 ANS - 0.000404 ANS^2 - 0.0137 ANS.ZP - 4.77 (R^2 = 0.794, P < 0.001, n = 26). For gel strength, it was: [gel strength] = - 0.0628 ANS - 8.91 SH + 821.1 (R^2 = 0.621, P < 0.001, n = 26). It was concluded that the coagulability of ovalbumin was affected by hydrophobicity and zeta potential with almost no involvement of sulphydryl groups, whereas, the gel strength was affected by hydrophobicity and sulfhydryl groups witn less involvement of zeta potential. The contribution of sulphydryl groups to the thermal aggregation of ovalbumin appeared to depend on protein concentration. AA

1709 DAVIS (CE), LEFFLER (R), ANDERSON (JB), SODERBERG (DL) and MEREDITH (FI). Effect of pH on absorbance of azo dye formed by reaction between nitrite and sulphanilamide/N-(1-naphthyl)ethylene-diamine in residual nitrite methods for foods. J. Assoc. Off. Anal. Chem. 68(3); 1985; 485-8

Absorbance at max wavelengths were recorded at 28 pH values (range 1.0-4.5) for each of the 5 nitrite concentrations, on fitting a mathematical equation to the data, its plot gives a 3-dimensional response surface showing the relationship between pH, nitrite concentration and absorbance. For the spectrophotometric measurement of nitrite, a modification has been proposed. BSN

1710 BARBERA (R), FARRE (R) and MONTORO (R). Atomic absorption spectrophotometric determination of cobalt in foods. J. Assoc. Off. Anal. Chem. 68(3); 1985; 511-3

The sample after wet digestion is relieved of iron by liquid-liquid extraction and cobalt isolated and extracted. With the help of flame atomic absorption spectrophotometry, final determination is completed. Analysis of NBS reference materials by this method gives results in close agreement with certified values. The method is reliable as evidenced from recovery studies. The limit of quantitation is 4.3 ng/ml. BSN

1711 SCHREIER (P) and IDSTEIN (H). High-resolution gas chromatography-fourier transform infrared spectroscopy in flavour analysis. Limits and perspectives. Z. Lebensmittel Unters. Forsch. 181(3); 1985; 183-8

1712 SURYAPRAKASA SASTRY (Ch), MURTHY (KVSS) and VEERABHADRA RAO (M). Spectrophotometric determination of hydrogen peroxide and peroxidase activity of foodstuffs. J. Food Sci. Technol. (India) 22(6); 1985; 420-22

A simple, rapid and accurate spectrophotometric method has been developed for the determination of H2O2 and peroxidase activity of Bangalore beans (**Mucuna alterrina**), broad beans (**Vicia faba**), horse radish root (**Cochlearia armoracia**) and buffalo milk based on the colour development with N,N-dimethyl-p-phenylenediaminedihydrochloride (DMPD) and H_2O_2 in the presence of peroxidase. For H_2O_2, the procedure followed is the addition of following solution: buffer (pH 6.0, 15 ml), DMPD (0.05%, 1 ml), horse radish peroxidase enzyme (5.0%, 1 ml) horse radish root solution or 0.875 purpurogallin units (Sigma sample 1 ml) and 0.35-5.5 ml H_2O_2 containing 10 mcg/ml. After dilution, the absorbance was measured at 530 nm between 2 and 7 minutes against blank. For peroxidase activity, buffer (pH 6.0, 6 ml) DMPD (0.2%,1 ml) H_2O_2 (0.03 M, 0.1 ml) and enzyme solution (0.5-2.0 ml), prepared separately from horse radish root,Bangalore beans, broad beans and milk) were placed in 10 ml flask and diluted to the mark and the absorbance was read at 530 nm with time against blank. Peroxidase activity was calculated using relationship $K'' \frac{\Delta}{\Delta} E/t$ where Δ E and Δt are increase in absorbance and time.KAR

1713 BOGNAR (A). Determination of vitamin B_6 in food by using high-performance-liquid-chromatography (HPLC). **Z. Lebensmittel. Unters. Forsch.** 181(3); 1985; 200-205 (German)

FOOD LAWS AND REGULATIONS

Nil

FOOD MICROBIOLOGY

1714 PFLUG (IJ), ODLAUG (TE) and CHRISTENSEN (R). Computing a minimum public health sterilizing value for food with pH values from 4.6 to 6.0. **J. Food Prot.** 48(10); 1985; 848-50

Dosa

1715 SONI (SK), SANDHU (DK) and VILKHU (KS). Studies on **dosa**-An indigenous Indian fermented food: Some biochemical changes accompanying fermentation. **Food Microbiol.** 2(3); 1985; 175-81

An overall increase in microbial load, batter volume, total nitrogen, soluble proteins, reducing sugars and a decrease in pH has been observed after 30 hours of fermentation of dosa batter which contained rice and black gram flour. Amylase after showing an increased activity in early stages declined gradually with the progress in fermentation. Both bacteria and yeast participated in fermentation, with bacteria dominating. KAR

Vinegars

1716 KRUEGER (DA) and KRUEGER (HW). Isotopic composition of carbon in vinegars. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 449-52

Algae

1717 LIN (LP). Microstructure of spray-dried and freeze-dried microalgal powders. **Food Microstruct.** 4(2); 1985; 341-8

Microstructure of spray dried and freeze dried microalgal powders from Chlorella and Spirulina was examined to improve their manufacturing techniques. MVG

Bacteria

1718 KROLL (RG). Electropositively charged filters for the concentration of bacteria from foods. Food Microbiol 2(3); 1985; 183-6

Electropositively charged 'Zeta plus' 05S filters adsorbed bacteria efficiently and consistently from pure culture (> 90%), vegetables (> 90%) and milks (c.80%). Although subsequent recovery of bacteria from the filters was poor and inconsistent, the large pore size of the filters (2 to 9 um) enabled comparatively large volumes of samples to be filtered and the use of these filters should greatly increase the sensitivity of rapid methods such as measurement of Impedance or assay of ATP. AA

1719 ENTIS (P). Rapid hydrophobic grid membrane filter method for **Salmonella** detection in selected foods: Collaborative study. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 555-64

1720 MEHLMAN (IJ), ROMERO (A) and WENTZ (BA). Improved enrichment for recovery of **Shigella sonnei** from foods. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 552-5

Mushroom

1721 KERESZTES (A), KOVACS (J) and KOVACS (E). Effect of ionizing irradiation and storage on mushroom ultrastructure. I. The gills of **Agaricus bisporus** (LGE.) Imbach and **Pleurotus ostreatus** (Jacq. Ex. Fr.) Kummer. **Food Microstruct.** 4(2); 1985; 349-55

In both species inhibition of spore production in irradiated specimens is caused by destroying basidia, rather than by retarding normal spore development. In **P. ostreatus** the hymenium appears to be more sensitive to irradiation than **A./ bisporus**, while the subhymenium and trauma are less sensitive than hymenium in both species.MVG

Yeasts

1722 DURANCE (TD) and SKURA (BJ). Isolation and characterization of the -galactosidase of waste lager yeast (**Saccharomyces carlsbergensis**). **Can. Inst. Food Sci. Technol. J.** 18(4); 1985; 306-10

1723 BUONO (MA) and ERICKSON (LE). Rapid measurement of **Candida utilis** dry weight with microwave drying. **J. Food Prot.** 48(11); 1985; 958-60

FOOD ADDITIVES

Colourants

1724 LEHMANN (G). Sugar couleur-caramel=additive-colorant? **Dtsch. Lebensmittel-Rundschau.** 81(12); 1985; 388-9 (German)

It is necessary to make a differentiation between sugar colour and caramel, since sugar colour, as a colouring agent to colour foodstuffs, is listed in the additives admission directive. Detecting sugar colour involves some difficulties; sugar colour types are classified according to their colouring intensity. A suggestion is made on how to differentiate between sugar colour and caramel, based on the fact that sugar colour contains 4(5)-methyl imidazole. In 23 types of sugar colour of different origin, we were able to trace this imidazole derivative. AA

1725 SCHEUTWINKEL-REICH (M) and HUDE (W Von der). On the **in vitro** mutagenicity of caramel colours. **Z. Lebensmittel Unters. Forsch.** 181(6); 1985; 455-7

In the present study, commercially available caustic and ammoniated caramel colours were tested for their mutagenic potential using the Ames assay. The test was performed using the standard test strains Salmonella typhimurium TA 1535, TA 1537, TA 98 and TA 100 with and without a metabolic activation system (S9-mix). Furthermore, a special preincubation procedure without metabolic activation system was applied. None of the tested caramel colours showed any mutagenic effect in the Ames test. AA

CEREALS

1726 SKERRITT (JH) and SMITH (RA). A sensitive monoclonal-antibody-based

test for gluten detection: Studies with cooked or processed foods. J. Sci. Food Agric. 36(10); 1985; 980-86

The method for detection of wheat, rye, barley and oat proteins in a wide range of foods requires immobilisation of food extracts upon nitrocellulose paper followed by treatment with an enzyme conjugated monoclonal antibody. Upon addition of the appropriate enzyme substrate gluten containing foods yield purple spots and non-gluten foods do not react. It is rapid, requires little sample preparation and does not require sophisticated equipment. KAR

1727 SKERRITT (JH). A sensitive monoclonal-antibody-based test for gluten detection: Quantitative immunoassay. **J. Sci. Food Agric. 36**(10); 1985; 987-94

An enzyme-coupled monoclonal antibody has been used to quantify gliadin like immunoreactivity in a variety of foods. Small discs of nitrocellulose are soaked in food extract or a series of standard gliadin solutions, and incubated with antibody and an enzyme substrate yielding a soluble product. By use of a photometer, standard curves for gliadin may be constructed and the apparent gliadin content of samples calculated. The limit of detection for wheat gliadin was approximately 20 µg/ml extract; overall time for analysis is 5-6 hrs. KAR

1728 SKERRITT (JH), DIMENT (JA) and WRIGLEY (CW). A sensitive monoclonal-antibody-based test for gluten detection: Choice of primary and secondary antibodies. **J. Sci. Food Agric. 36**(10); 1985; 995-1003

Of a series of monoclonal antibodies prepared to cereal proteins, two antibodies with specificity for low mobility, heat stable prolamines in wheat and related cereals were investigated as possible probes for a list for gluten in cooked or processed foods. Urea-based solvents were found to be superior to isopropanol or sodium dodecylsulphate extractants in allowing sensitive detection of trace amounts of prolamines. The antibodies detected bread and durum wheat and rye prolamines most strongly, followed by barley than oats; detection of maize and rice was quite weak. KAR

1729 STEINMEYER (S), TIEBACH (R) and WEBER (R). Determination of deoxynivalenol and nivalenol in cereals by gas chromatography of the heptafluorbutyrates. Z. Lebensmittel. Unters. Forsch. 181(3); 1985; 198-9 (German)

A method for the analysis of deoxynivalenol (DON) and nivalenol (NV) in cereals is described. This method is suitable for routine use for control purposes. The extract is purified on a florisil column. Derivatization with heptafluorbutyrylimidazole is followed by quantitative determination by means of capillary gas chromatography and electron capture detection (ECD). For verification purposes, two-dimensional thin layer chromatography is applied to GC-positive extracts. 67 cereal samples and cereal products from the Berlin market place have been assayed. Depending on the type of sample, the limit of detection was 20 to 30 µg/kg for DON, and 100 to 300 µg/kg for NV. AA

Triticale

1730 VAIDEHI (MP). Utilization of triticale in Indian dishes. **J. Food Sci. Technol. (India). 22**(6); 1985; 425-8

Triticale at 25, 50 and 75% was blended with wheat fractions including maida (refined flour), soji (semolina) and atta (whole wheat flour) and about 21 savoury and sweet dishes were prepared and judged by sensory evaluation. Among the dishes, sweet preparations were ranked high followed by snacks, breakfast and lunch items. As the proportion of triticale was increased in the blends, the acceptability

decreased; especially 250% level. The dishes of high acceptability were Jamoon, Kesaribath, porridge, Idli, Chapathis, parathas and phulkas. The nutritional value of wheat flour gets enhanced by the addition triticale flour. KAR

Wheat

1731 STIBBE (K). Practical experiences with fall planting of spring wheat. **Getreide Mehl Brot. 39(8); 1985; 227-8** (German)

1732 GUNZEL (G). Collaborative investigations regarding quality of spring wheat planted in fall. **Getreide Mehl Brot. 39(8); 1985; 229-32** (German)

1733 KAY (A). Flour milling technology - recent trends and developments. **Milling. 17112); 1985; 18-20, 32**

Brief discussion on wheat intake and storage, wheat grits, wheat cleaning, wheat milling, finished products and automation as aspects of recent trends and developments in flour milling technology. BSN

1734 AL SALEH (A) and GALLANT (DJ). Rheological and ultrastructural studies of wheat kernel behaviour under compression as a function of water content. **Food Microstruct. 4(2); 1985; 199-211**

The rheological behaviour of two wheat varieties (**Triticum durum**), cultivated at different sites, was studied by Instron as a function of water content. Patterns of crushed grains were investigated by scanning electron microscopy. The apparent modulus of elasticity of the wheat grains was apparently related to their vitreosity. The mealy grain generally had an apparent modulus of elasticity lower than that of the vitreous one and the modulus appeared to berelated to the air spaces in mealy endosperm. Humidification favoured the conversion of vitreous endosperm to the mealy state. Grain morphology, and particularly the kernel crease played an important role during grain crushing. AA

1735 DOOSE (O). Mechanism of a maturing wheat dough, influences and effects on the product quality. **Getreide Mehl Brot. 39(8); 1985; 232-7** (German)

1736 WEIPERT (D). Quality evaluation of dry wheat gluten. **Getreide Mehl Brot. 39(8); 1985; 242-7** (German)

1737 SEIBEL (W). Baking tests with wheat gluten addition to wheat flour. **Getreide Mehl Brot. 39(8); 1985; 248-52** (German)

MILLETS

1738 MALLESHI (NG) and DESIKACHAR (HSR). Milling, popping and malting characteristics of some minor millets. **J. Food Sci. Technol. (India) 22(6); 1985; 400-403**

14 varieties of (i) foxtail millet (**Seteria italica**), 2 varieties each of (ii) proso millet (**Panicum miliaceum**) and (iii) barnyard millet (**Echinochloa frumentacia**) one variety each of (iv) little millet (**Panicum miliare**) and (v) kodo millet (**Paspalum scorbiculatum**) were analysed for proximate composition, and milling, popping and malting characteristics. The milling yield of polished grains was 69.0-79.0% in (i), 67.3-69.3% in (ii), 63.9-68.1% in (iii), 74.5% in (iv) and 63.7% in (v). The popping yield was 47-84% in (i), 59-78% in (ii), 57-74% in (iii) 94% in (iv) and 78% in(v). The volume expansion (ml/g) was 4.8-8.3 in (i), 9.5-11.6 in (ii), 6.9-7.2 in (iii), 7.2 in

(iv) and 11.0 in (v). The percent germination was high in all millets (69-99%). (i), (ii) and (iv) showed considerable α-amylase activity (92-167 units) on germination, and (iii) and (v) had low (47-64 units) activity. The hot paste viscosity of malt flours ranged from 30-74 centipoise for (i) and (ii), 140-190 centipoise for (iii), 92 centipoise for (iv) and 710 centipoise for (v). The crude fibre content was negatively correlated with the yield of the polished grains; the relationship between thousand kernel weight and volume of popped grains was highly significant. Amylose content was negatively correlated with the volume expansion of popped grains. The α-amylase activity of malt samples bore positive relationship with Ca and the starch content of seeds. KAR

Maize

1739 POMERANZ (Y) and CZUCHAJOWSKA (Z). Structure of coarse and fine fractions of corn samples ground on the Stenvert Hardness Tester. **Food Microstruct. 4(2); 1985; 213-9**

Effects of grinding corn with Stenvert Hardness Tester on the coarse and fine fractions of corn were studied. The structure was evaluated at low magnifications by light microscopy and scanning electron microscopy. MVG

1740 GARROTE (RL), SILVA (ER) and BERTONE (RA). Distribution and thermal inactivation of peroxidase and lipoxygenase in corn on the cob (**Zea mays L.**) **Rev. Agroquim. Technol. Aliment. 25(3); 1985; 373-83** (Spanish)

The distribution of peroxidase and lipoxygenase in kernel, outer cob and central cob sections of Jubilee yellow sweet corn was studied, as well as thermal inactivation in steam at 80, 90 and 100 C during 240, 480, 720 and 960 seconds, chilling the ears in agitated iced water at 2 C, for the same time. Highest peroxidase activity is in outer cob section (60.02%), while 78.47% of lipoxgenase activity is in kernels. Within kernels 74% activity of both enzymes is localized in the pericarp. None of the blanching treatments used inactivated completely peroxidase in any corn on the cob section. Lipoxgenase was inactivated completely at 100 C after 720 seconds in kernel, but not in the outer section of the cob. It is possible that this enzyme play an important role in flavour deterioration of frozen corn on the cob. D values for peroxidase were 288 ± 43.80, 161 ± 9.60 and 69.60 ± 2.40 seconds at 80, 90 and 100 C, respectively, which Ea obtained was 86.31 ± 10.81 KJ/mol. D values for lipoxygenase were 3 to 4 times smaller that for peroxidase. AA

1741 SPILMANN (JR) Jr. Modification of the rapid screening method for aflatoxin in corn for quantitative use. **J. Assoc. Off. Anal. Chem. 68(3); 1985; 453-6**

Sorghum

1742 KAVADIA (VS), PAREEK (BL) and SHARMA (LP). Phosphine residues in sorghum stored in mud Kothi and metal drum. **J. Food Sci. Technol. (India) 22(6); 1985; 442-4**

Sorghum was stored in mud Kothi (0.87 x 0.55 m inner dimension), the common rural storage receptacle and in metal drum (0.86 x 0.55 m inner dimension), having storage capacity of 200 and 165 l respectively. Sorghum grains were stored in these receptacles and phosphine tablets (3 g) were kept at the rate of 2 to 4 tablets/t at the top of the grain and the receptacles were sealed. Grains were exposed to fumigation for 3 days before the fumigated structures were opened. Samples were drawn immediately after fumigation and at daily intervals for 5 days. Effect of exposure of the grain in the open, in shade and

direct sun for 1 hour and washing with water for 5 minutes on the dissipation of residue on sorghum grains were also studied. Use of 2 and 4 tablets/t of grain resulted in an initial deposit of 0.0077 and 0.0375 ppm in sorghum and in mud kothi and 0.0185 and 0.0435 ppm in metal drum respectively. Whereas bottom samples contained 0.005 and 0.0355 ppm and 0.0115 and 0.044 ppm phosphine respectively. Residual phosphine in sorghum stored in mud kothi was < 0.05 p.p/m. in 2 to 4 days and in metal drum was below the detectable level in 3 to 5 days. The residue in sorghum grain dissipated by 32.01-74.14% and 22.99-43.48% under shade as against 48.01-80.62 and 59.49-73.65% in sun from mud kothi and metal drum respectively. Washing the grain lowered the residues below detectable level soon after fumigation. KAR

PULSES

1743 HUGHES (JS) and SWANSON (BG). Microstructural changes in maturing seeds of the common bean (**Phaseolus vulgaris** L.). **Food Microstruct.** 4(2); 1985; 183-9

Scanning electron microscopy was employed to study the changes occurring in seeds of common bean at weekly intervals throughout maturation. During the seven week study, no major structural changes were observed on the surface of the seed coat. In the cross-section of the seed coat, there was substantial increase in thickness of parenchyma cell layer in young seeds followed by a dramatic decrease in thickness as the seed matured. In colytedons, the diameter of storage cells and starch granules increased over time and the distinct protein bodies became visible only in later stages of maturity. An extensive vascular system responsible for rapid delivery of water and nutrients to the cotyledens was observed both in immature and mature beans. MVG

Bengal gram

1744 PALLAVI MEHTA, ASHA PATIL and KALYANI (VU). Acceptability and shelf quality of Bengal gram dhal fried in selected oils and oil blends. **Indian J. Nutr. Dietet. 22**(12); 1985; 365-75

Bengal gram dhal fried in (i) groundnut oil; (ii) cottonseed oil; (iii) rapeseed oil, (iv) cotton seed oil + rape seed oil (50:50); (v) cottonseed oil + rapeseed oil + mustard oil (40:40:20), and (vi) cottonseed oil + rapeseed oil + groundnut oil (40:40:20) was assessed for its acceptability during six weeks of storage by monitoring changes in the physico-chemical (oil absorption, temperature of frying,refractive index, peroxide value, total saturated fatty acids, unsaturated fatty acids) and organoleptic (appearance, colour, odour, taste, overall acceptability) scores. The product fried in (i), (ii), (iii), (iv), (v) and (vi) were equally acceptable. Peroxide value of (ii), (iii) and (v) did not change significantly upto the end of six weeks, while that of (iv) and (vi) showed significant increases from the IVth and IIIrd weeks respectively. Dhal fried in (iv), (v) and (vi) did not register any increase in free fatty acids during six weeks of storage. Polyunsaturated fatty acid composition of (ii) was found to be the best, and the absorption of oil was also least in this than in others. BSN

Cluster bean

1745 UMA REDDY (M) and NITA REDDY (D). Effect of home processing on the biological quality of cluster bean (**Cyamopsis tetragonoloba**) protein. **J. Food Sci. Technol. (India)** 22(6); 1985; 415-8

Fresh. hybrid and local variety of cluster beans were boiled for 3 minutes in 6 l water or pressure cooked for 15 minutes at 1.1 kg/cm2 pressure and soak water discarded. Moisture, ash, crude fibre, fat, N, Ca, and Fe, thiamine, lysine, methionine, cystine and trypsin inhibitors were estimated. Dried processed beans were also fed at 10 and 20% level to provide 1.7 and 3.4% protein to rats to assess the nutritional quality. The protein efficiency ratio of raw bean at 10 and 20% level of feeding was 2.53 and 1.94% respectively for both the varieties. The biological value, digestibility coefficient, and net protein utilization of raw cluster bean was lower than boiled bean and pressure cooking further improved it. The trypsin inhibitor activity of raw hybrid variety was 21.9% whereas the local vareity was 52%. Boiling and pressure cooking reduced the trypsin inhibitor activity to 47.7% and 11.8% in local variety and 23.3 and 0% in hybrid variety respectively. But this reduction in trypsin inhibitor activity did not improve the growth response appreciably. KAR

Pigeon pea

1746 RAMAKRISHNAIAH (N) and KURIEN (PP). Non-starchy polysaccharides of pigeon pea and their influence on dehulling characteristics. **J. Food Sci. Technol. (India). 22(6); 1985; 429-30**

Non-starchy polysaccharides (NSP) of 3 cultivars, each of pigeon pea (Cajanus cajan) of good and poor dehulling characteristics were studied for identifying components having a direct/indirect relation with the degree of dehulling. Water soluble (WS-NSP) and water insoluble (WIS-NSP) fractions of the NSP as also cellulosic fraction of whole grain were isolated and analysed for pentoses, hexoses and uronic acid contents. The total NSP ranged between 18.72 and 19.84% and did not bear any relationship with their dehulling behaviour. The cellulosic content of the cultivars ranged from 8.37 to 9.56% which also did not affect the dehulling characteristics of the grains. The WS-NSP content ranged from 1.58 to 2.33%; cultivar with superior dehulling contained lower amounts of WS-NSP. The pentoses and hexoses of WN-NSP did not inlfuence dehulling characteristics, but the uronic acid content of WS-NSP fraction showed influence on dehulling; poor dehulling grains contained higher amounts of uronic acid. Pentoses, hexoses and uronic acids of WIS-NSP did not show significant influence on the dehulling behaviour of the cultivar. KAR

OILSEEDS AND NUTS

Coconuts

1747 MONRO (JA), HARDING (WR) and RUSSELL (CE). Dietary fibre of coconuts from a Pacific Atoll: Soluble and insoluble components in relation to maturity. **J. Sci. Food Agric. 36(10); 1985; 1013-8**

Polysaccharide fractions were measured in coconuts at three stages of maturity, which corresponded to dietary usage in the Tokelau Islands of the South Pacific. Kernel was significantly extracted with cold water (cw), hot water (HW), hot 0.5% ammonium oxalate, (HOX), 1M H_2SO_4 and 72% H_2SO_4 and the monosaccharide compositions of the fractions determined. Total readily soluble fractions (CW+HW+HOX) were predominantly galactomannan, and decreased from 77% of the polysaccharide in the immature kernel to 8.8% of that in the mature kernel. Insoluble mannan increased during maturation to be the major polysaccharide component in the mature kernel. KAR

Groundnuts

1748 NARASIMHA CHAR (BL), JAGANMOHAN RAO (S); AZEEMODDIN (G), ATCHYUTA RAMAYYA (D) and THIRUMALA RAO (SD). Analysis of new varieties of groundnuts grown in Junagadh. **J. Food Sci. Technol. (India)** 22(6); 1985; 430-31

14 new vareties of groundnut developed by the National Research Centre for Groundnut, Junagadh (India) analysed showed the following range of values. Shell content 23-40%, oil 47-55%, free fatty acids, 0.2-1.0% saponification value 184-198 and iodine value 92-99. KAR

1749 IRSHAD (M) and SHARMA (CB). Amino acid composition of α-amylase protein inhibitor from **Arachis hypogaea** seeds. **Indian J. Biochem. Biophys.** 22(6); 1985; 371-2

The protein inhibitor of α-amylase extracted and purified from peanut seeds having a molecular weight and electrophoretic mobility of 25000 and 0.14 respectively was further purified to homogeneity and its sugar content and amino acid composition were determined. Results showed that it is a sugar-free protein and differed in its amino acid composition and structure from that of 0.19 inhibitor from wheat and other sources. MVG

Rapeseeds

1750 DIOSADY (LL), RUBIN (LJ), PHILLIPS (CR) and NACZK (M). Effect of alkanol-ammonia-water treatment on the glucosinolate content of rapeseed meal. **Can. Inst. Food Sci. Technol. J. 18**(4); 1985; 311-5

The effect of alkanol and alkanol-ammonia treatment, with and without water, on the glucosinolate content of laboratory-prepared Altex and commercial rapeseed meals was studied. The meals were treated with methanol, ethanol, isopropanol and t-butanol, and with the same alkanols containing anhydrous ammonia (0-15% for methanol and 10% for other alkanols), and water (0.35%). The results showed that methanol was the most effective alkanol for the removal of glucosinolates. The treatment of laboratory-prepared meal with methanol removed about 55% of the glucosinolates initially present in the meal. Methanol containing 35% water removed 80% of the glucosinolates. However, treatment of this meal with 10% ammonia in methanol reduced the glucosinolates content to 0.2 mg/g after a quiescent period of 15 minutes. The addition of water to the methanol-ammonia solutions further reduced the glucosinolates to trace levels. Methanol or methanol-ammonia were less effective in reducing the glucosinolate content of commercial meal. This suggests that the treatment of the meal during processing reduces the extractability of the glucosinolates. The effectiveness of glucosinolate removal by alkanols and solutions containing ammonia and water could be ranked as follows: methanol > ethanol > isopropanol > t-butanol. The preferred solvent mixture for the removal of glucosinolates is 10% NH_3 in methanol containing 5% H_2O. AA

Soybeans

1751 SHEARD (PR), MITCHELL (JR) and LEDWARD (DA). Comparison of the extrusion cooking of a soya isolate and a soya flour. **J. Food Technol.** 20(6); 1985; 763-71

The effects of barrel temperature, die temperature and moisture content on soya extrusion were investigated using response surface analysis. Seven variables were measured, and a model derived for the effect of temperature and moisture content on pressure. Two samples were investigated, a soya flour (with a high protein dispersibility index) and a commercial soya isolate consisting of denatured protein. Differences between the samples are discussed. Changes along the length of the barrel, were investigated using a 'dead stop technique' and differential scanning calorimetry (DSC) revealed the points at

which the major protein components in soya flour were denatured. AA

TUBERS AND VEGETABLES

1752 SADDIK (MF), EL-SHERBEENY (MR) and BRYAN (FL). Microbiological profiles of Egyptian raw vegetables and salads. **J. Food Prot. 48**(10); 1985; 883-6

Thirty six out of 250 samples of raw vegetables and salads that were collected from several food service and commercial establishments in Egypt, were tested for **Staphylococcus aureus.** Salmonella was isolated from two samples of green leafy vegetables (greens) and one sample of mixed sald that most likely contained greens. One sample of greens, one sample of parsley and three samples of mixed salads contained shigellae. Aerobic colony counts of more than 10^6 CFU/g were found in 80% of samples. About $1x10^3$ **S. aureus/g** were found in three of the 36 samples. BSN

1753 BADAWY (AS), GERBA (CP) and KELLEY (LM). Survival of rotavirus SA-11 on vegetables. **Food Microbiol. 2**(3); 1985; 199-205

Survival of rotavirus on lettuce, radishes, and carrots was studied to evaluate the potential of rotavirus transmission by vegetables irrigated with wastewater. The vegetables were contaminated with rotavirus SA-11 and stored at 4 C and room temperature in covered and uncovered containers to simulate post harvest conditions. Virus decay rates were greater on radishes and carrots than lettuce. Decay rates of rotavirus on lettuce, radish, and carrot ranged from -0.057 to 0.0479 (log_{10} pfu/day). Rotavirus SA-11 survived on lettuce, radish, and carrot for 25 to 30 days at 4 C, but at room temperature survival was very different for the various vegetables varying from 5 to 25 days. Greatest survival was always observed on the lettuce. These data suggest that rotaviruses can survive long enough on contaminated vegetables as to be transmitted by this vehicle. AA

Beets

1754 MAZZA (G) and CHUBEY (BB). Influence of cultivar and growing season on pigments, soluble solids and root yield of red beets. **Can. Inst. Food Sci. Technol. J. 18**(4); 1985; 332-4

Betacyanine concentration in 16 red beet cultivars ranged from 244.5-122.7 mg/100g fresh weight while betaxanthine concentrations ranged from 216.5 mg to 67.5 mg/100 g fresh weight. High correlation coefficients were observed between betacyanine and betaxanthine, but were rather weak between pigments and yield, pigments and hunter colour values and pigments and solids. BSN

1755 DEMAUX (M). Pressing and drying of beet pulps - factors in cost reduction. **Ind. Aliment. Agric. 102**(7-8); 1985; 723-30 (French)

Despite the high price of oil, pressing is still the most profitable way of treating beet pulp. The next best treatment is to convert the pulp to charcoal. Steam drying will probably be one of the best solutions in the future. KMD

Potatoes

1756 KHURANA (DS), RANDHAWA (KS) and BAJAJ (KL). Carbohydrate content of potato (**Solanum tuberosum** L.) tubers treated with isopropyl-N (3-chlorophenyl) carbamate under different storage conditions. J. Sci. Food

Post harvest application of isopropyl-N (3-chlorophenyl) carbamate considerably reduced the degradation of starch when potato tubers were stored in an evaporative cooling chamber. The starch degraded at a faster rate when tubers were kept under refrigerated and room storage conditions. AA

1757 ZITNAK (A) and FILADELFI (MA). Estimation of taste thresholds of three potato glycoalkaloids. **Can. Inst. Food Sci. Technol. 18(4)**; 1985; 337-9

In vivo evaluation of three major potato glycoalkaloids showed two distinct taste stimuli - a bitter caffeine-like taste and an astringent brain sensation, characterized as burning and peppery. The two stimuli merged at higher concentrations resulting in a persistent burning sensation lasting upto two hours. For α-solanine, α-chaconine, and B_1-chaconine, the absolute bitter taste thresholds were 0.313, 0.078 and 0.078 mg respectively with corresponding values for the pain stimulus at 0.625, 0.323 and 0.156 mg, while for caffeine and solanidine,the corresponding values were 1.25 and 0.313 mg and 1.25 and 0.313 mg respectively upto 1000 ppm concentration level. BSN

1758 COXON (DT) and FILMER (AAE). The fate and distribution of chlorpropham when applied to stored potatoes as a sprout suppressant. **Pestic Sci. 16(4)**; 1985; 355-63

Two varieties of potato were treated with ^{14}C- or radiolabelled chloropropham to suppress sprouting, and stored under controlled ventilation conditions in the laboratory for upto 6 months at 10 C. The migration of chlorpropham into the potato tubers was studied at intervals by autoradiography and analysis of tuber extracts. Little penetration of chlorpropham beyond the peel layer occurred even after storage for 6 months. No identifiable degradation product of chlorpropham was detected in the extracts, although there was evidence of bound non-extractable residues. Volatile compounds lost by ventilation through the storage containers were collected in cold traps and analysed by liquid scintillation counting. Loss of chlorpropham by volatilisation from the tuber surface was very small. AA

1759 NOTERMANS (S), DUFRENNE (J) and KEYBETS (MJH). Use of preservatives to delay toxin formation by **Clostridium botulinum** (Type B,strain okra) in vacuum-packed, cooked potatoes. **J. Food Prot. 48(10)**; 1985; 851-5

An organoleptically safe product with a prolonged shelf life was obtained by dipping potatoes in a solution of ascorbic acid and citric acid before vacuum packing and cooking (95 C for 10 minutes). BSN

1760 KHURANA (DS) and RANDHAWA (KS). Yield and quality of dehydrated chips prepared from sprout inhibitor treated potatoes stored under different conditions. **J. Food Sci. Technol. (India). 22(6)**; 1985; 433-6

Potato plants of cultivar Kufri Chandramukhi (white) and Kufri Sindhuri (Red) were treated with 2000, 3000, 4000 and 5000 ppm. of maleic hydrazide; 40, 80, and 120 ppm of naphthalene acetic acid (NAA), 100 and 200 ppm tri-iodobenzoic acid and 0.50 and 0.75 kg active ingredient/ha of 2-chloroethyl trimethyl ammonium chloride, through green foliage, 6 weeks prior to harvesting. Isopropyl N(3-chlorophenyl) carbamate (CIPC) at 4000 and 5000 ppm was applied as post harvest dip treatment, 2 weeks after harvest. The harvested crop was cured for 15 days at 20-23 C before storing at cold store (CS) (2-3 C) or evaporative cooling chamber (ECC) fitted with desert room cooler with 8-13 C. Chips were made after curing and after 75 days of storage. Tubers from each treatment were washed, peeled and soaked in 0.1% sodium chloride solution, sliced into chips (0.1 cm thick) steeped in potassium metabisulphite solution(0.1%) for 10 minutes, drained and dried in trays at 110 C for 1 hour followed by exposure at 70 C for 4-5 hours. Dehydrated chips were evaluated for colour, texture,

taste and overall acceptability with 1-4 point scale by a panel of 7 judges. Both the cultivars yielded same amount of product (152-154 g/kg of tuber) when fresh tubers were processed into chips. The yield of chips in ECC stored tubers was 159-163 g/kg potato and 124-127 g/kg in CS potatoes. But in untreated tubers,the yield decreased due to sprouting. Treatment with sprout inhibitors increased the yield of dehydrated chips in ECC but not in CS. Chips from red variety were darker than those from white variety of potatoes. Kufri Chandramukhi proved betterfor processing into chips. Among the various chemicals, post-harvest application of CIPC (5000 ppm) has suppressed sprouts in ECC for 4 months. KAR

1761 BACZKOWICZ (M) and TOMASIK (P). A novel method of utilization of potato juice. **Starch. 37**(7); 1985; 241-8

Potato juice after removal of all proteins by a thermal coagulation, decolorization, aromatization and addition of preservative can be utilized as a liquid detergent. It has excellent washing properties. AA

Leaf proteins

1762 GURMUKH SINGH and NARENDRA SINGH. Use of organic solvents to decolourise leaf protein concentrate. **J. Food Sci. Technol. (India).** 22(6); 1985; 436-8

Solvents (methanol, ethanol, n-propanol, isopropanol, n-butanol, iso-butanol, iso-amyl alcohol, ethyl acetate, acetone and mixtures of these) were used for removing the pigments fromacid and heat precipitated leaf protein concentrate (LPC). For acid precipitated LPC, the minimum volume of solvent required was acetone followed by iso-propanol < iso-propanol + hexane (2:1) and acetone + hexane (2:1) <-n-propanol and n-butanol < ethanol. For heat precipitated LPC, the order of minimum solvent needed was acetone < iso-propanol < iso-propanol + hexane (2:1) <-n-propanol and n-butanol < acetone + hexane (2:1) <-n-propanol and n-butanol < acetone + hexane (2:1). The solvent extracted LPC contained higher quantity of protein (49.8-70.8%) than the control. Acid precipitated and solvent extracted LPC had lighter colour than the heat treated LPC. Lightest coloured LPC by heat precipitation was obtained with iso-propanol + hexane (2:1) and iso-propanol treated LPC gave lightest colour in acid treated LPC. KAR

1763 GURMUKH SINGH and NARENDRA SINGH. Nutritional evaluation of some leaf protein preparations. **Indian J. Nutr. Dietet.** 22(10); 1985; 308-12

Clarified extract of lucerne was processed to yield (i) heat precipitated (unfractionated) leaf protein concentrate (LPC); (ii) heat precipitated and isopropanol extracted LPC; (iii) cytoplasmic LPC fractionated by heat; and (iv) cytoplasmic LPC fractionated with isoamyl alcohol. Highest digestibility(96.18%) and biological value (76.95%) comparable to that of casein was observed in (iii). (iv) and (i) were similar in their digestibility. Both (ii) and (iii) showed significant differences in their biological value in comparison with (i) and (iv). BSN

Tomatoes

1764 OLORUNDA (AO) and TUNG (MA). Simulated transit studies on tomatoes: Effects of compressive load, container, vibration and maturity on mechanical damage. **J. Food Technol.** 20(6); 1985; 669-78

Apples

1765 KRISHNAPRAKASH (MS), ARVINDAPRASAD (B), DHANARAJ (S), ANANTHAKRISHNA (SM), KRISHNAPRASAD (CA) and NARASIMHAM (P). Preliminary studies on the use of growth regulators for hastening or delaying of maturation rate of apples. **Indian Food Ind.** 4(4);1985; 150-54

Early or late harvesting of apples to extend the period of availability and to regulate the market supply is a regular practice with growers in order to get better prices. However, this is not done on a scientific basis and hence in the early harvested apples the storage and sensory quality is affected,while in the late harvested apples there is considerable loss due to excessive preharvest drops as well as deterioration in the storage quality. A study was carried out using growth regulators - α-Naphthalene acetic acid (at 100 ppm), Gibberellic acid (at 25 ppm) and Alar (at 1000 ppm) alone as well as Alar in combination with each one of the other two in order to regulate the maturation rate of apples. The data on maturation pattern of apples revealed that preharvest application around 110+10 days of Alar in combination with GA delays attainment of optimum harvest maturity of apples, while α-NAA alone or in combinationwith Alar can hasten the maturation rate of apples. The data on sensory evaluation of apples confirmed the hastening effect of α-NAA alone or in combination with Alar. AA

1766 PRABHA (TN) and PATWARDHAN (MV). A comparison of the polyphenolic patterns in some Indian varieties of apples and their endogenous oxidation. **I. J. Food Sci. Technol. (India)** 22(6); 1985; 404-7

The qualitative and quantitative nature of polyphenols was ascertained in peel and pulp tissue of apples (8 varieties) along with their endogenous oxidation and relative contribution towards endogenous browning. Qualitatively similarity in the phenolic profile and in the extent of browning was observed between varieties. Differences in the nature of polyphenols were observed between peel and pulp tissues. The phenolics commonly present in peel tissues. The phenolics commonly present in peel and pulp tissues were epicatechin, gallocatechin, quercetin glycoside, and two leucoanthocyanidins. Catechin, p-coumaryl quinic acid cis- and trans chlorogenic acids were present exclusively in the pulp, while the three unidentified flavan compounds were present in the peel tissue alone. The major polyphenols of the pulp tissue were cis- chlorogenic acid and epicatechin followed by catchin and trans chlorogenic acid and the two leucoanthocyanidins. Epicatechin showed the highest relative browning units among pulp phenolics followed by cis-chlorogenic acid and catechin. Gallocatechin, trans-chlorogenic acid and p-coumaryl quinic acid formed the minor oxidizable substrates. In peel, epicatechin was in highest concentration followed by three flavans and two leucoanthocyanidins. Gallocatechin was present in smaller concentrations. Higher relative browning was shown by epicatechin; gallocatechin was a minor substrate. Totally there were 6 endogenously oxidizable substrates in pulp and 2 in peel; ripening did not change the phenolic profile and the endogenous oxidation pattern. KAR

1767 PRABHA (TN) and PATWARDHAN (MV). A comparison of the browning potential of some Indian cultivars of ripening apples. II. **J. Food Sci. Technol. (India).** 22(6); 1985; 431-3

An attempt has been made to study the browning tendency of some Indian apple cultivars at raw and ripe stages and correlate with the polyphenols and polyphenoloxidases (PPO). The total phenolic contents (mg/100 g) in peel ranged from 630-1660 in raw and 874-1920 in ripe and in pulp 96.7-222.5 in raw and 90-305 in ripe fruits. The % of total flavans in the total phenolics was around 85% in peel and 50%

pulp. Ripening reduced the phenolic content of pulp slightly and showed an increase in that of peel. The PPO activity (1 unit = 0.001 OD, change at 420 nm/min/mg protein) in peel was 800-1400 in raw and 1744-4617 in ripe fruits and in pulp it was 13225-18750 in raw and 6080-10560 in ripe fruits. The rate of browning in apple pulp was very much lower in the ripe stage than in raw fruits. This correlated with the lowering of PPO activityin the pulp tissues during ripening. The rates of browning shown by varieties correlated well with their phenolic levels. Amburi variety showed the highest browning potential and Golden Delicious and Red Delicious variety the least browning. (For part I see the same Journal page 404-407). KAR

1768 GORIN (N) and HOMKOOP (T). Equipment for obtaining acetone powder from large samples of apples. **Z. Lebensmittel. Unters. Forsch. 181**(3); 1985; 221-2

At successive intervals, we removed representative samples of 30-50 apples from a batch of about 180 kg of Golden Delicious apples being under a controlled atmosphere at 3-4 C. We constructed simple equipment so that acetone powders could be prepared from these large samples for subsequent study of the activity of the enzymes peroxidase, protease, esterase and amylase. The equipment consisted of a one-gallon (3.8 litre) Waring Blendor and a stainless steel cylinder (capacity about 15 litres), both insulated and connected to a cryostat able to reach -80 C. Phenolic compounds were not present in the powder, as indicated by lack of discoloration and precipitation of the respective enzyme extracts, which were prepared without polyvinylpyrrolidone (PVP) and without agents against condensation of quinones. AA

1769 LITTLE (CR), TAYLOR (HJ) and McFARLANE (F). Postharvest and storage factors affecting superficial scald and core flush of 'Granny Smith' apples. **Hortscience. 20**(6); 1985; 1080-82

Initial oxygen stress treatments in 0% to 0.5% O_2 followed by ultralow oxygen storage (O_2 < 1.7% in 0 C, 92-96% RH) of Granny Smith apples reduced fruit susceptibility to storage scald allowing satisfactory control of the disorder after 9 months of storage, with 300 mg 1-1 diphenylamine (DPA). Susceptibility to storage scald was reduced by low ethylene levels during sotrage in 3.0% CO_2 + 3.5% O_2, but not during storage in ultra low O_2 0.5% CO_2 + % 0 % O_2. KAR

Bananas

1770 SHANTHA KRISHNAMURTHY and KUSHALAPPA (CG). Studies on the shelf life and quality of Robusta bananas as affected by post-harvest treatments. **J. Hortic. Sci. 60**(4); 1985; 549-56

The effects of skin coating with 'Waxol' (6%) and 'Tal Prolong' (1.0% and 2.0%) combined with packing in polyethylene bags and the use of the ethylene absorbent 'Purafil', on the physiochemical changes and ripening of cv. Robusta banana were compared at ambient storage conditions (21-28 C; 70-90 RH). There were no differences in ripening between untreated and Waxol (6%)-treated fruits, but 1% and 2% Tal Prolong delayed ripening by 4 to 5 days. Waxol- and Prolong-treated fruits kept in ventilated polyethylene packs showed delayed ripening by 6 days, and untreated fruits kept in sealed Purafil packs also showed a 7-day delay in ripening. This delayed ripening was correlated with reduced rates of softening, and the development of yellow surface colour and with increases in moisture, the pulp:peel ratio, acidity, tannin, total sugar, starchand alcohol-insoluble residue contents in the pulp of the fruit. Weight loss during storage was considerably less in fruits kept in polyethylene bags than in unpacked fruits. Untreated fruits packed in polyethylene bags ripened to a higher quality than untreated, upacked fruits. Waxol did not extend the shelf life of the bananas except when used on packaged fruit. Prolong was

effective in delaying ripening both with and without packaging but the fruits were yellowish-green, softer and slightly inferior in quality to untreated fruits. The ethylene absorbent provided maximum delay in ripening and retention of quality. AA

Citrus

1771 COHN (R). The manifold ways of citrus processing. **Confructa.** **29**(3); 1985; 178-84

Dates

1772 YOUSIF (AK), HAMAD (AM) and MIRANDILLA (WA). Pickling of dates at the early khalal stage. **J. Food Technol.** 20(6); 1985; 697-702

Elderberries

1773 BRONNUM-HANSEN (K), JACOBSEN (F) and FLINK (JM). Anthocyanin colourants from elderberry (**Sambucus nigra** L.) 1. Process considerations for production of the liquid extract. **J. Food Technol.** 20(6); 1985; 703-11

Elderberry is a good source of anthocyanin, (ACY) containing between 2-10 ACY/g berry. Depending on variety and maturity, the anthocyanin concentration varied. BSN

1774 BRONNUM-HANSEN (K) and FLINK (JM). Anthocyanin colourants from elderberry (**Sambucus nigra** L.). 2. Process considerations for production of a freeze dried product. **J. Food Technol.** 20(6); 1985; 713-23

Freeze drying of elderberry anthocyanin extract under the proper conditions produces an intensely coloured powder with retention of both anthocyanins and physical structure. The various conditions examined included extract concentration, stabilizer concentration, pH and freeze drying conditions. It was found that minimum anthocyanin degradation and product structure alteration occur, when the undiluted extract is adjusted to pH = 3, has DE 20 maltodextrin structure stablilizer added to a 2.5% level and is freeze dried at a maximum platen temperature of 75 C and maximum product temperature of 60 C. Under these conditions, the recovery of anthocyanin is 94% and physical structure and solubility is preserved. AA

1775 BRONNUM-HANSEN (K) and FLINK (JM). Anthocyanin colourants from elderberry (**Sambucus nigra** L.). 3. Storage stability of the freeze dried product. **J. Food Technol.** 20(6); 1985; 725-33

Storage of freeze dried anthocyanin extract from elderberry was conducted under various conditions of water activity (a_w), temperature, atmosphere composition and presence or absence of light. It was found that at $a_w \leq 0.31$, water uptake has essentially no effect on the anthocyanin product. At $a_w \geq 0.5$, a significant increase in anthocyanin degradation rate is observed. The BET monolayer value for water sorption (a_w = approximately 0.4) coincide with the a_w interval ($0.31 \leq a_w \leq 0.5$) over which anthocyanin degradation shows a marked change in behaviour. High temperature in combination with high aw exerted the most pronounced effect on the stability of anthocyanins. At conditions of 50 C, 0.5 a_w, the anthocyanin half life was to be approximately 2 months. Anthocyanin products with limited access to water are quite inert systems. When the dry anthocyanin extract was stored at ambient temperature and low a_w (≤ 0.3), the degradation rate was found to be so low (anthocyanin half life > 5 years) that the use of the powder in low moisture food products is evident. AA

Grapes

1776 AKHTAR (M), SUBDEN (RE), CUNNINGHAM (JD), FYFE (C) and MEIERING (A). Production of volatile yeast metabolites in fermenting grape musts. **Can. Inst. Food Sci. Technol. J. 18(4); 1985; 280-83**

Freon 11 efficiently extracted 12 major and over 60 minor yeast esters and other metabolites. The extracts were organoleptically representative of the aroma and bouquet of fermenting musts or wine. Comparisons of some major metabolites from 4 different wine yeasts strains indicated no qualitative differences and few quantitative differences in the formation of yeast metabolites. The concentration of Freon 11 extractable metabolites rose slowly at the beginning of the fermentation and reached maximum concentration between 7 and 4 Brix. AA

Papayas

1777 CHAN (HT) Jr., SANXTER (S) and COUEY (HM). Electrolyte leakage and ethylene production induced by chilling injury of papayas. **Hortscience. 20(6); 1985; 1070-72**

Papayas (**Carica papaya** L.) were stored at 5 or 10 C for 1, 4, 7, 14, or 21 days. Chilling injury was detectable as visible skin discolorations after 4 days at 5 C. Differences in electrolyte leakage and Hunter "L" values between fruit stored at 5 C and 10 were not significant until after 7 days of storage. Fruit stored at 5 for more than 4 days also produced more ethylene upon transfer to warmer temperatures than did fruit stored at 10 C. Differences in ethylene production between fruit stored under chilling temperatures, 5, and nonchilling temperatures, 10, increased with length of storage. Papayas chilled for 14 days at 5 retained a capacity to convert ACC to ethylene. AA

SUGAR, STARCH AND CONFECTIONERY

Glucose

1778 RAFFI (J), AGNEL (J-F), BOIZOT (C), THIERY (C) and VINCENT (P). Glucose oligomers as models to elucidate the starch radiolysis mechanism. **Starch. 37(7); 1985; 228-31**

A comparative study of gamma irradiated glucose and glucose oligomers has been carried out in order to find a suitable model to understand the mechanism of starch radiolysis. Measurements of malonaldehyde and formic acid, produced by irradiation, showed that the quantitative comparison of radiolytic products was not significant for our purpose, which was also confirmed by a literature survey. However, an electron spin resonance kinetic study of several oligomers, irradiated in the powder state, showed that maltopentaose, and to a lesser extent, maltotriose, may be used as models in the radiolysis of **starch**. AA

1779 MAKKEE (M), KIEBOOM (APG) and BEKKUM (HVan). Glucose isomerase and its behaviour under hydrogenation conditions. **Starch. 37(7); 1985; 232-41**

A survey is given of glucose isomerase, its sources, its mechanism of isomerization and its data and properties in three different immobilized forms. In addition, the effect of a number of parameters on the activity of immobilized glucose isomerase has been investigated, e.g. hydrogen pressure, Mg (II) and Ca (II), transition metal ions, borate and sugar alcohols. Immobilized glucose isomerase remains sufficiently active under hydrogenation conditions to maintain D-glucose and D-fructose in equilibrium, D-glucitol, in contrast to D-mannitol, has some inhibiting effect on the enzyme action. The D-glucose/D-fructose equilibrium constant is independent of the total

sugar concentration (between 0.2-2.2 M). AA

Starch

1780 KARKALAS (J). An improved enzymic method for the determination of native and modified starch. **J. Sci. Food Agric. 36**(10); 1985; 1019-27

An improved method for the determination of starch by sequential hydrolysis with thermostable bacterial -amylase and fungal amyloglucosidase is described. Glucose was determined colorimetrically by a glucose oxidase-peroxidase-chromogen system at pH 7. Native normal and waxy starches, and distarch phosphate, gave quantitative yields of glucose with a high degree of precision (coefficient of variation less than 1%). Acetylated distarch phosphate, high-amylose starch and retrograded amylose were initially treated with 1M NaOH for 30 minutes, then neturalised and analysed successfully as normal starch. Oxidised starch did not give a quantitative yield of glucose because of the presence of dicarboxylic groups in the polymer. For samples containing normal and waxy starch, the analysis was carried out in about 4 hours. The method was applied to a range of starch-containing foodstuffs and the results are reported. AA

1781 ABRAHAM (TE) and MATHEWS (AG). Isolation and physico-chemical characterization of Coleus tuber starch. **Starch. 37**(7); 1985; 217-20

The physico-chemical properties of starch isolated from Coleus tuber (**Coleus parviflorus**) has been investigated. The yield of extracted starch is 14.4% from the raw tuber. The starch behaves like a cereal starch. The granules are 2.5 - 17.5 µm in diameter and show "A" pattern on X-ray diffraction. The starch exhibits limited two stage swelling and rapid dissolution in DMSO. It has an iodine affinity of 3.63, and the amylose content is 18.18%. The paste viscosity was stable during cooking and has a positive set back unlike cassava starch. The starch was somewhat resistant to amylase attack. AA

1782 CRAIG (SAS), STARK (JR) and DHAR (DN). Studies on starch from an Indian Crocus. **Starch. 37**(7); 1985; 220-24

The molecular properties and granular appearance of starch from an Indian crocus (**Crocus sativus**) have been examined by methods involving iodine-staining, enzymic degradation, gel chromatography and scanning electron microscopy. The granules were relatively small (3-15 µm), and had a rough surface and flattened facets indicative of close packing. The amylose content of 27.4% was rather higher than that of many cereal and potato starches, but came within the higher end of the range of "normal" values. AA

Honeys

1783 MARINI (S) and RIGHI (G). Estimation of 5-hydroxymethylfurfural in honey - Rapid HPLC method. **Ind. Aliment. 24**(9); 1985; 693-4 (Italian)

Honey, diluted with bi-distilled water, was filtered on a 0.45 µm Millipore, and injected into a 10 um RP 18 column. The mobile phase consisted of methanol and water (10:90). Absorbance was measured at 285 nm. KMD

Indian Sweets

1784 VENKATASUBBAIAH (P) and DWARAKANATH (CT). Microbiological quality and growth of Staphylococcus aureus in liquid type of traditional Indian sweets. **J. Food Sci. Technol. (India)** 22(6); 1985; 394-7

Liquid sweets based on poppy seed, green gram, Bengal gram, wheat semolina, sago, vermicelli, (prepared in the laboratory) Basundi (contains concentrated milk cream, sugar and flavourings) and badam milk (consists of almond milk, colours and flavourings) (collected

from hotels in Mysore city, India) were assessed for their microbiological quality. The total bacterial count ranged from 2.0×10^2 to 13.3×10^5/g. Coliforms were absent in all the samples except in green gram based preparation and in basundi. Yeasts and moulds were present in green gram based preparations and in badam milk. The pH of the samples varied from 6.15 to 6.80 and the sucrose concentration in these sweets were not inhibitory for the growth of **Staph. aureus**. Sterilized and unsterilized smaples of liquid sweets were inoculated with **Staph. aureus** and stored at room temperature (26 ± 2 C) and at 37 C. Sampling was done at 4, 6, 8, 18 and 24 hour intervals to find out the extent of growth of **Staph. aureus**. Growth rate of inoculated Staph. aureus was better at 37 C than at 26±2 C and the associative microflora present in general was not found inhibiting the growth of **Staph. aureus**. Growth was more in unsterilized samples of poppy, green gram and sago based sweets and in basundi at both the temperatures and in Bengal gram sweet at 26 ± 2 C. Maximum growth in sterilized and unsterilized samples at both the temperatures was attained at 12 to 18 hours except in basundi and badam milk which needed shorter period. Maximum growth was observed in 4 hours and 8 hours in sterilized and unsterilized badam milk respectively. Whereas it needed 8 hours for maximum growth in sterilized and unsterilized basundi at 37 C. KAR

BAKERY PRODUCTS

Biscuits

1785 YOUNG (H), FELLOWS (P) and MITCHELL (J). Development of a high energy biscuit for use as a food supplement in disaster relief. **J. Food Technol. 20(6)**; 1986; 689-95

A final recipe for biscuit formulation intended for use in certain disaster situations has been reported. The biscuit has good baking characteristics, nutritional value and palatability.,Three biscuits,when given to children provide an extra 2.09 mJ and approximately 8 g protein in their diets. BSN

Bread

1786 EL TINAY (AH), EL MAHDI (ZM) and EL SOUBKI (A). Supplementation of fermented sorghum kisra bread with legume protein isolates. **J. Food Technol. 20(6)**; 1985; 679-87

1787 TORTOSA (E), ORTOLA (C) and BARBER (S). Chemical changes during bread dough fermentation. I. Lipids of bread dough. **Rev. Agroquim. Technol. Aliment. 25(3)**; 1985; 417-27 (Spanish)

1788 BARBER (S), MARTINEZ-ANAYA (MA) and BAGUENA (R). Microflora of the sour dough of wheat flour bread. II. Functional properties of commercial yeasts and pure strains of **S. cerevisiae** thereof, in sugar solutions. **Rev. Agroquim. Technol. Aliment. 25(3)**; 1985; 436-46 (Spanish)

1789 BARBER (S), MARTINEZ-ANAYA (MA) and BAGUENA (R). Microflora of the sour dough of wheat flour bread. III. Functional properties of commercial yeasts and pure strains of **S. cerevisiae** thereof, in wheat flour dough. **Rev. Agroquim. Technol. Aliemtn. 25(3)**; 1985; 447-57 (Spanish)

1790 BARBER (CB), COLLAR (C), PRIETO (JA) and BARBER (S). Chemical changes during bread-dough fermentation. IV. Water soluble nitrogen fraction of bread-dough. **Rev. Agroquim. Technol. Aliment. 25(3)**; 1985; 428-35 (Spanish)

1791 DORR (R). Determination of the crumb temperature a new method for evaluating optimum baking. **GetreideMehl Brot.** 39(8); 1985; 237-41 (German)

1792 SCHUBART (U) and THOMAS (B). Food effects on the cholesterol level, especially by bread. **Getreide-Mehl Brot.** 39(8); 1985; 252-4 (German)

Snack

1793 HRIVNAK (J). New and exciting developments in extruded products and technologies. **Activities Rep. R & D Assoc.** 37(2); 1985; 16-7
A brief discussion on the use, reasons, operations employed and the advantages obtained by using single and twin screw extruders for processing of dry pet foods and puffed snack products. BSN

MILK AND DAIRY PRODUCTS

1794 GUTHRIE (RK), MAKUKUTU (CA) and GIBSON (RW). Recovery of Vibrio cholerae 01 after heating and/or cooling. **Dairy Food Sanit.** 5(11); 1985; 427-30

Milk

1795 CARROLL (RJ), BASCH (JJ), PHILLIPS (JG) and FARRELL (HM) Jr. Ultrastructural and biochemical investigations of mature human milk. **Food Microstruct.** 4(2); 1985; 323-31

1796 BROOKER (BE). Observations on the air-serum interface of milk foams. **Food Microstruct.** 4(2); 1985; 289-96

1797 HEERTJE (J), VISSER (J) and SMITS (P). Structure formation in acid milk gels. **Food Microstruct.** 4(2); 1985; 267-77
Network formation in acid milk gels during acidification was monitored by freeze-fracture electron microscopy. The study shows that network formation was a much more complex process than just an aggregation of the original casein micelles and is accompanied by subtle dissociation and association phenomena of the caseins. The observed sequence of events can be explained from the course of zeta potential, the association of beta casein, the release of colloidal calcium phosphate from the micelle, the influence of heat treatment and from some observation of the international structure of the casein micelle. MVG

1798 EL-SHIBINY (S), ABD EL-SALAM (MH), MAHFOUZ (MB) and EL-ETRIBY (H). The use of skim milk permeate in the preparation of spray dried beverages II. Beverage based on strawberry. **Z. Lebensmittel. Unters. Forsch.** 181(3); 1985; 223-5
Concentrated permeate (27% TS)was prepared by ultrafiltration of skim milk and concentrated by reverse osmosis and vacuum evaporation. The whole strawberry fruit was homogenized and added to concentrated permeate at the rate of 1:3 and left to settle, and the clear supernatant liquid was separated. Artificial colour was added and the mixture was spray-dried. Cane sugar and citric acid were added to the powder at the rate of 25:1:25 and product was packed in polyethylene bags and stored in air-tight containers. The changes in the physical properties, chemical composition and vitamin contents of the powdered beverage were followed when fresh and after 3 and 6 months of storage. Also organoleptic properties of the powder formed were assessed by a taste panel of the reconstituted beverage (15% TS). AA

799 SCHELLHAASS (SM) and MORRIS (HA). Rheological and scanning electorn microscopic examination of skim milk gels obtained by fermenting with ropy and non-ropy strains of lactic acid bacteria. Food Microstruct. 4(2); 1985; 279-87

The skim milk gels were made from steamed reconstituted nonfat dry milk inoculated with 2% of a single strain starter culture and incubated at 35, 37 and 45 C until pH 4.5 ± 0.05 was attained. Gels fermented by slime-producing strains of **Streptococcus thermophilus, S. cremoris** and **Lactobacillus bulgaricus** showed similar rheological and physical characteristics. The slime produced by ropy starter cultures, as shown by electron micrography, was associated with the cell surface as well as the protein matrix of the system. The gels fermented by slime producing organisms showed a decreased susceptibility to sineresis as compared to those fermented by non ropy strains at the same temperatures. Excessive slime production when cultures were incubated for longer periods at lower temperatures gave a coagulum with decreased relative firmness and apparent viscosity. But the gels fermented by ropy strains at higher incubation temperatures showed greater viscosity than gels fermented by non-ropy strains at the same temperatures. MVG

1800 JANSEN (LA) and ELGERSMA (RHC). Direct heating of drying air with natural gas in the preparation of milk powder. **J. Soc. Dairy Technol. 38(4); 1985; 134-9**

Direct gas firing leads to the milk powder showing a slight increase in nitrate content and a marked increase in nitrite content. There seemed to be no significant relation between the nitrosamine content of the product and the method of heating the drying air. KAR

1801 SAITO (Z). Particle structure in spray-dried whole milk and in instant skim milk powder as related to lactose crystallisation. **Food Microstruct. 4(2); 1985; 333-40**

The advantages of ashing samples with a plasma asher as a pretreatment for scanning electron microscopy and the effect of lactose crystallisation on the structure of milk powders were studied and the presence of β -lactose crystals in stored whole milk powder was demonstrated. Results showed that structures of instant skim milk and whole milk particles were well preserved after the ashing procedure. The crystallisation of -lactose hydrate occurred in milk powders according to moisture uptake. While in the instant skim milk powder, -lactose hydrate crystals were observed on the particle surface, in whole milk powder the surface of particles stored under conditions favouring lactose crystallisation contained numerous droplets of free fat and only a few lactose crystals. Only β -lactose was found as crystals in whole milk powder stored at 37 C for 5 months at RH of less than 20%. In fresh powders, prismatic crystals of lactose formed in Heinz fluid, whereas in stored powders, they did not. MVG

1802 RICHARDSON (T). Chemical modifications and genetic engineering of food proteins. **J. Dairy Sci. 68(10); 1985; 2753-62**

Discusses: protein esterification; protein interactions; circular dichroism; protein surface hydrophobicity; interfacial and surface tensions and genetic engineering of food proteins. BSN

1803 MORR (CV). Functionality of heated milk porteins in dairy and related foods. **J. Dairy Sci. 68(10); 1985; 2773-81**

Discusses: physico-chemical properties of milk proteins; effect of heat on physico-chemical properties of milk proteins; effect of heat on functional properties of milk proteins in milk products; commercial milk protein products; and functionality of isoalted milk proteins in formulated food products. BSN

1804 SWAISGOOD (HE) and CATIGNANI (GL). Digestibility of modified milk proteins: Nutritional implications. **J. Dairy Sci. 68**(10); 1985; 2782-90

Discusses: protein modification and possible nutritional consequences; quantitation of amino groups; use of immobilized proteinases and peptidases for analysis of structural and nutritional changes; and effect of processing conditions on protein modification and digestibility. BSN

1805 BAHRO (KJ), SCHENK (M) and EBERT (F). Results of the obligatory testing for milk protein in the Frankfurt-am-Oder district, and its effects on the production and effectiveness of the Seelow Cheese Works. **Ernahrungsforschung. 30**(5); 1985; 137-41 (German)

1806 GOTO (T) and HSIEH (DPH). Fractionation of radioactivity in milk of goats administered ^{14}C -aflatoxin B_1. J. Assoc. Off. Anal. Chem. 68(3); 1985; 456-8

1807 YOUSEF (AE) and MARTH (EH). Rapid reverse phase liquid chromatographic determination of aflatoxin M1 in milk. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 462-5

Butter

1808 SATISH KULKARNI and RAMA MURTHY (MK). Effect of ripening and salting on rheological characteristics of butter from buffalo cream. **J. Food Sci. Technol. (India) 22**(6); 1985; 408-11

Buffalo cream was inoculated with a mixed culture of **Streptococcus lactis** and **Streptococcus cremoris** at 1.5% level and incubated at 23 C for 12, 18 and 24 hours to obtain acidity of 0.3, 0.5 and 0.7% lactic acid respectively. After churning, salt was added to butter at 2 and 3% level. Butter quality parameters measured are penetration value (PV), spreadability and stickiness, viscosity and yield stress (YS), oiling off (OO) and sensory evaluation. PV of butter increased or the butter became increasingly softer with the increase in the acidity of cream with and without added salt. The mean score of butter decreased from 4.4 and 0.15% acidity to 3.6 to 0.70% acidity. Butter became harder with the addition of salt and so also scores increased from 3.8 to 4.1% when 3% salt was added. Salting increased OO in cream significantly; OO of butter increased with increase in the acidity of cream at all salt levels; salting significantly decreased OO in butter. The extruder thrust of butter decreased with the increase in acidity of cream above 0.3% lactic acid at all salt levels. Acidity of cream and salting in butter did not show any definite trend on stickiness of butter measured in terms of extruder friction or sensory evaluation. The viscosity and YS of butter decreased drastically with increase in acidity of cream. Salting showed no significant effect on viscosity and YS. KAR

Cheese

1809 CARIC (M), GANTAR (M) and KALAB (M). Effects of emulsifying agents on the microstructure and other characteristics of process cheese - A review. **Food Microstruct. 4**(2); 1985; 297-312

Effects of the most commonly used emulsifying agents such as citrates and phosphates on selected properties, including microstructure, of process cheese, are reviewed. MVG

1810 FLEMING (K), JENNESS (R), MORRIS (HA) and SCHMIDT (R). Properties of calcium caseinates with disparate performance in imitation cheese. **Food Microstruct. 4**(2); 1985; 313-21

Selected physical and chemical properties of two commercial cal-

cium caseinate samples that have been shown to have different functionalities in imitation cheese manufacture, have been studied. MVG

1811 BLEY (M), JOHNSON (ME) and OLSON (NF). Predictive test for the tendency of cheddar cheese to brown after processing. **J. Dairy Sci.** 68(10); 1985; 2517-20

A quick and accurate test was developed to predict the tendency of cheese to turn brown with excessive heating during and after processing. The predictive test, which is suitable for use in commercial settings, was designed to permit instrumental or subjective assessment of colour intensity. The objective instrumental measurements showed high correlation between colour intensity of the predictive test on the unprocessed cheese and colour intensity of process cheese made from the same test cheese. The subjective test was a small, simple, and rapid version of the objective method that was quite accurate in determining the propensity of colour development of cheese after processing. Colour intensities developed in subjective test related, visually, very closely to those in the objective procedure. AA

1812 LO SCHIAVO (A), MINNITI (A) and PANEBIANCO (A). Research on the presence of **Staphylococcus aureus (S. aureus)** and thermonucleases (TN-ases) in commercial Ricotta cheese. **Ind. Aliment.** 24(9); 1985; 695-6 (Italian)

Tests for **S. aureus** and TN-ases were carried out on samples of Ricotta cheese taken from the market in Meosina. **S. aureus** was not found in any of the samples, while TN-ases were detected in 10 samples. KMD

1813 CHAVARRI (FJ), NUNEZ (JA), BAUTISTA (L) and NUNEZ (M). Factors affecting the microbiological quality of Burgos and Villalon cheeses at the retail level. **J. Food Prot.** 48(10); 1985; 865-9

Ice cream

1814 DOLAN (KD), SINGH (RP) and WELLS (JH). Evaluation of time-temperature related quality changes in ice cream during storage. **J. Food Process. Preserv.** 9(4); 1985; 253-71

The keeping quality of vanilla-flavoured ice cream was investigated during 21 weeks of storage. Ice cream samples at 4 different temperature treatments were evaluated for 3 attributes by 14 judges using a deviation-from-reference scale. Sampling tools and presentation containers were designed to provide uniform samples and serving temperatures without melting. The ice cream kept at a variable storage treatment showed a trend toward becoming less firm and darker in yellow than the other samples from the 86th day of storage onward. Differences in creaminess, hardness, and vanilla flavour were noticed in ice cream after 170 days of storage. A commercial time-temperature indicator was used to minotor temperature exposure; but, since indicator response was slower than published, no correlations could be made with quality changes. AA

Shrikhand

1815 ARUNA CHAUDHARY and ATREJA (SK). Nutritional quality of proteins of shrikhand. **J. Food Sci. Technol. (India).** 22(6); 1985; 411-4

Shrikhand (dessert prepared from fermented milk) was prepared from standardised (3.0% fat) fresh buffalo milk using conventional LF-40 (**Lactic fermentii**) consisting of different strains of **Strep. lactis**) and a new yoghurt culture (YH) (**Streptococcus thermophilus** and **Lactobacillus bulgaricus**, 1:1 proportion). The fermented materials called chakka were dried into powder and Shrikhand was prepared by

mixing fresh chakka with powdered sugar at 80 g/100 g. Not much variation was found in the Shrikhand prepared from the LF-40 and YH. Isocaloric synthetic diets were fed to albino rats at 10% protein level and compared with control casein diet. The biological value, digestibility coefficient, modified protein efficiency ratio and net protein utilization values of chakka were found equal to casein. The nutritional qualities of protein were similar for the product prepared from LF-40 or YH fermentation, but the latter culture needed lesser time for making the product. KAR

Whey

1816 NAKAI (S) and LI-CHAN (E). Structure modification and functionality of whey proteins: Quantitative structure-activity relationship approach. **J. Dairy Sci. 68**(10); 1985; 2763-72

Discusses: quantitative structure-activity relationship approach, heating; chemical modification; egg white substitute preparation; and analysis of treated whey protein concentration. BSN

1817 PRENDERGAST (K). Whey drinks - Technology, processing and marketing. **J. Soc. Dairy Technol. 38**(4); 1985; 103-5

The characteristics of whey-based fruit drinks, which make them widely acceptable to consumers in Europe are described. Methods of production, based on fermentation and on direct acidification, are given. AA

Yoghurt

1818 SCHMIDT (RH), VARGAS (MM), SMITH (KL) and JEZESKI (JJ). The effect of ultra-high temperature milk processing on yoghurt texture. **J. Food Process. Preserv. 9**(4); 1985; 235-40

MEAT AND POULTRY

Meat

1819 HITCHCOCK (CHS) and CRIMES (AA). Methodology for meat species identification: **A review. Meat Sci. 15**(4); 1985; 215-24

Discusses: Electrophoretic methods; immunological methods; immunodiffusion; enzyme-linked immunoabsorbent assay; heated samples; heat stable antigens; and renaturation. BSN

1820 PATTERSON (RM) and SPENCER (TL). Differentiation of raw meat from phylogenically related species by enzyme-linked immunosorbent assay. Meat Sci. 15(3); 1985; 119-23

For differentiating raw meat from closely related speices, the ELISA (enzyme linked immunoabsorbent assay) enables visual assessment of 0.1% donkey meat in horse meat, 0.1% goat meat in sheep meat and 1% buffalo meat in beef. The technique is rapid, simple and the results could be obtained within one hour. BSN

1821 EGAN (AF) and WILLS (PA). The preservation of meats using irradiation. **CSIRO Food Res. Q. 45**(3); 1985; 49-54

Aspects covered in this review include the general aspects of the irradiation of meats; destruction of pathogens, treatment of carcasses or cuts of fresh meats in air; treatment of packaged fresh meats; treatment of processed meats, treatment of poultry and special applications. KAR

1822 LAMBDEN (AE), CHADWICK (D) and GILL (CO). Oxygen permeability at sub-zero temperatures of plastic films used for vacuum packaging of meat. **J. Food Technol. 20**(6); 1985; 781-3

1823 WAGNER (JR) and ANON (MC). Effect of freezing rate on the denaturation of myofibrillar proteins. **J. Food Technol. 20**(6); 1985; 735-44

1824 ALI (MS). Rapid quantitative method for simultaneous determination of benzoic acid, sorbic acid, and four parabens in meat and nonmeat products by liquid chromatography. **J. Assoc. Off. Anal. Chem. 68**(3); 1985; 488-92

The LC method involves extraction of benzoic acid, sorbic acid and parabens from nonmeat and meat samples with 70% ethanol, filteration and analysis by reverse phase LC. Fresh sausage and hamburger samples homogeneously ground are fortified with benzoic acid, sorbic acid and paraben each at five different concentrations. Average recovery for each preservative at all 5 levels is greater than 95%, with a coefficient of variation less than 5%. BSN

1825 SANTOS (C), JALON (M) and MARINE (A). Tyramine content in foods of animal origin. I. Meats, meat derivatives and related products. **Rev. Agroquim. Technol. Aliment. 25**(3); 1985; 362-8

An analytical study was carried out on the content of tyramine in meat, meat derivatives and other related products consumed in Spain; in most of these no previous determination of the tyramine content has been performed. The greatest concentrations of tyramine were found in those products subjected to curing and/or fermentation processes (fermented sausages), whereas fresh food, cooked sausage and luncheon meat, in general, were seen to have much lower tyramine contents. Some of the products analyzed could lead to a rise in arterial pressure in the event of their interacting with IMAO drugs, in particular, certain fermented sausages and hamburgers meats. In contrast, none of the products studied was seen to contain sufficient tyramine to trigger a migraine reaction. AA

1826 GARCIA-REGUEIRO (JA), CASADEMONT (G) and MONFORT (JM). High performance liquid chromatography determination of preservatives in meat products. **Rev. Agroquim. Technol. Aliment. 25**(3); 1985; 391-9 (Spanish)

A rapid method for analysis of preservatives in meat products, specially cooked products, is presented. The extraction is carried out by a solution of 20% MeOH in 2.0% HOAc or with 4% HOAc in MeOH (100%). An aliquot of total volume of extraction is microfiltered previously to its chromatographic analysis. In the case of important interferences from matrix of the sample, a cleanup based in a partition on hexane-ether (1:1) is applied. The identification and quantification is carried out by HPLC analysis in reversed phase. The separation of sorbic and benzoic acids is achieved in a short time (10 minutes). AA

1827 BELJAARS (PR) and HORWITZ (W). Comparison of the Volhard and potentiometric methods for the determination of chloride in meat products: Collaborative study. **J. Assoc. Off. Anal. Chem. 68**(3); 1985; 480-84

Beef

1828 DOLEZAL (HG), SMITH (GC) and SAVELL (JW). Effects of USDA feeder grade and time-on-feed on carcass characteristics and cooked beef palatability. **Meat Sci. 15**(3); 1985; 125-35

1829 JONES (AD), HOMAN (AC), FAVELL (DJ), HITCHCOCK (CHS), BERRYMAN (PM), GRIFFITHS (NM) and BILLINGTON (MJ). Investigation of the levels of N-

methylhistidine in a range of beef cuts and offals. **Meat Sci.** 15(3); 1985; 137-47

1830 DUCASTAING (A), VALIN (C), SCHOLLMEYER (J) and CROSS (R). Effects of electrical stimulation of post-mortem changes in the activities of two Ca dependent neutral proteinases and their inhibitor in beef muscle. **Meat Sci.** 15(4); 1985; 193-202

1831 EIKELENBOOM (G), SMULDERS (FJM) and RUDERUS (H). The effect of high and low voltage electrical stimulation on beef quality. **Meat Sci.** 15(4); 1985; 247-54

1832 KNIZE (MG), ANDRESEN (BD), HEALY (SK), SHEN (NH), LEWIS (PR), BJELDANES (LF), HATCH (FT) and FELTON (JS). Effects of temperature, patty thickness and fat content on the production of mutagens in fried ground beef. **Food Chem. Toxicol.** 23(12); 1985; 1035-40

1833 LEDWARD (DA). Post-slaughter influences on the formation of metmyoglobin in beef muscles. **Meat Sci.** 15(3); 1985; 149-71

1834 COMI (G) and CANTONI (C). Yeasts and meat. **Ind. Aliment.** 24(9); 1985; 683-7 (Italian)

44 species of yeasts, belonging to 8 genera, were isolated from fresh and refrigerated ground beef. The principal species present were **Trichosporon cutaneum, T. pullulans, Candida zeylonoides, C. intermedia, Rhodotorula rubra, R. glutinos,** and **Cryptococcus flavus.** The yeasts in fresh ground beef belonged principally to the genus **Torulopsis,** those in refrigerated ground beef to the genus **Trichosporon.** The greatest number of yeasts isolated from fresh ground beef was 0-103 µfc/g, and from refrigerated ground beef, 107 µfc/g. KMD

1835 LORD (DW) and SWAN (KJ). The connective tissue content of four bovine cuts. **J. Assoc. Publ. Anal. 23**(3); 1985; 71-5

1836 WHITE (WJP) and LAWRIE (RA). Variations in the levels of 3-methyl-L-histidine of the myosins within the bovine carcass. **Meat Sci. 15**(3); 1985; 173-81

1837 HAMM (R) and GOTTESMANN (P). Lipoamide dehydrogenase, citrate synthase, and β-hydroxyacyl-CoA-dehydrogenase in skeletal muscle. VII. Influence of temperature and rate of freezing of bovine muscle on activity and subcellular distribution of the enzymes in the thawed tissue. **Z. Lebensmittel. Unters. Forsch. 181**(3); 1985; 210-16 (German)

Samples of bovine muscle (post rigor) were frozen at different temperatures between -5 and -196 C at different freezing rats,and thawed at room temperature. The activities of the mitochondrial enzymes lipoamide dehydrogenase, citrate synthase and β-hydroxyacyl-CoA-dehydrogenase were determined in the supernatant of the tissue homogenates in phosphate buffer (total enzyme activity), as well as in the press juice of the intact tissue (enzyme activity in the sarcoplasma). From the results, it was concluded that the damage to mitochondrial membranes upon fast freezing is primarily a result of intracellular (and perhaps also intramitochondrial) ice formation, whereas the membrane damage during slow freezing is primarily due to dehydration caused by the migration of water form the muscle fibers into the extracellular space as a result of osmotic effects. Ion concentration in the nonfreezing fraction of tissue water seems to be only of minor importance for the disintegration of mitochondrial membranes. AA

1838 GRIFFIN (CL), STIFFLER (DM), SMITH (GC) and SAVELL (JW). Palatability characteristics of loin steaks from Charolais crossbred bulls and

steers. **Meat Sci.** 15(4); 1985; 235-46

1839 GULLETT (EA), ROWE (DL) and JONES (SDM). Quality of roasts from bulls and steers of early and late fattening types. **Can. Inst. Food Sci. Technol. J.** 18(4); 1985; 296-301

1840 KONDAIAH (N), ANJANEYULU (ASR), KESAVA RAO (V), SHARMA (N) and JOSHI (HB). Effect of salt and phosphate on the quality of buffalo and goat meats. **Meat Sci.** 15(3); 1985; 183-92

1841 WOOLTHUS (CHJ) and SMULDERS (FJM). Microbial decontamination of calf carcasses by lactic acid sprays. **J. Food Prot.** 48(10); 1985; 832-7

1842 SMULDERS (FJM) and WOOLTHUIS (CHJ). Immediate and delayed microbiological effects of lactic acid decontamination of calf carcasses - influence on conventionally boned versus hot-boned and vacuum packaged cuts. **J. Food Prot.** 48(10); 1985; 838-47

Mutton

1843 VIJAYA RAO (D) and BHAGIRATHI (B). Microbial changes in mutton due to repeated freezing and thawing. **J. Food Sci. Technol. (India)** 22(6); 1985; 422-5

Mutton cuts were kept at -18 to -20 C for 18 hours removed and kept at ambient temperature (30-33 C) for 3.5 to 4 hours before being analysed for microbial load. This freeze thaw cycle was repeated 2 and 4 times every time, analysing for microbial load. Mutton cuts were also covered with protective covering like polythene (300 gauge) and agar (3% molten sterilized) coating either separately or in combination. Freezing caused a reduction in standard plate count (SPC) and coliforms while reduction of psychrotrophs was less. In the thaw following freezing, SPC and coliforms increase in numbers much more rapidly while psychrotrophs increased marginally. Freezing did not help to reduce the numbers after the first thawing was completed. Drip loss after 3 cycles showed variability ranging from 3.15 to 9.30%. Agar coating combined with polythene wrapping helped in reducing the drip loss and in maintaining the microbial counts at slightly lower levels. KAR

1844 KELLY (CA), DEMPSTER (JF) and McLOUGHLIN (AJ). Effect of hot water spraywashing on the appearance of lamb carcasses of different weights. **J. Food Technol.** 20(6); 1985; 753-61

Lamb carcasses of > 22 kg weight were not adversely affected by spray washing, but carcasses of < 22 kg weight were affected to some extent. Characteristics of carcasses significantly affected included the appearance of the fat in the crutch region and on the back, and the degree of flaccidity and dampness of the abdominal region. These faults were alleviated somewhat during refrigerated storage and consequently the faults detected in the experiments were probably not of commercial significance since, under pilot market tests in Europe, buyers did not find any faults in spray washed carcasses. AA

Pork

1845 RENOU (JP), MONIN (G) and SELLIER (P). Nuclear magnetic resonance measurements on pork of various qualities. **Meat Sci.** 15(4); 1985; 225-33

1846 GARCIA-ROCHE (MO), BECQUER (A), CARRERA (JA), DOMINGUEZ (A), PUMES (P), BERNAL (E) and IZQUIERDO (L). Nitrite content in Cuban smoked meat products. **Rev. Agroquim. Technol. Aliment.** 25(3); 1985; 384-90 (Spanish)

The nitrite content in 497 samples of three types of smoked pork meat products (ham, cutlet and shoulder), from five Cuban provinces, was determined by spectrophotometry. The average values found in the three types of products were significantly lower ($p < 0.01$) than the national tolerance limit (200 mg/kg). Moreover, in smoked ham and cutlet, the mean contents were significantly lower than the tolerance limit proposed by the Health Ministry (125 mg/Kg), but not in shoulder. AA

1847 WILLEMOT (C), POSTE (LM), SALVADOR (J), WOOD (DF) and BUTLER (G). Lipid degradation in pork during warmed-over flavour development. **Can. Inst. Food Sci.Technol. J.** 18(4); 1985; 316-22

1848 D'AOUST (J-Y), PURVIS (UT), COULTER (RM) and WEISS (K). **Salmonella** in fresh pork liver and chicken liver in Canada: A 1979-80 survey. **Can. Inst. Food Sci. Technol. J.** 18(4); 1985; 323-5

Pig

1849 FLORES (J) and NIETO (P). Composition and characteristics of the lipid of adipose and muscular tissues of the pig. **Rev. Agroquim. Technol. Aliment.** 25(3); 1985; 305-15 (Spanish)

The fatty acid compositions of the adipose tissue and the muscular tissue of the pig have been reported, and their characteristics pointed out. Factors which affect the fatty acid composition - e.g. feeding, sex, and race - have also been discussed. KMD

1850 REUTERSWARD (AL), ASP (NG) and BJORCK (I). Protein digestibility of pigskin and bovine tendon in rats. **J. Food Technol.** 20(6); 1985; 745-52

Swine

1851 HAAGSMA (N), NOOTEBOOM (RJ), GORTEMAKER (BGM) and MAAS (MJ). A rapid sample preparation method for the determination of sulphamethazine in swine tissue by high-performance liquid chromatography. **Z. Lebensmittel-Unters Forsch.** 181(3); 1985; 194-7

Ham

1852 FLORES (J), BERMELL (S) and NIETO (P). Evaluation of the quality of meat products. III. Dry cured ham. **Rev. Agroquim. Technol. Aliment.** 25(3); 1986; 400-408 (Spanish)

Frankfurters

1853 BECHTEL (PJ), McKEITH (FK), MARTIN (SE), BASGALL (EJ) and NOVAKOFSKI (JE). Properties of frankfurters processed with different levels of sodium bicarbonate. **J. Food Prot.** 48(10); 1985; 861-4

Sausages

1854 MURPHY (D). A note on the composition of some Australian (State of Victoria) sausages and sausage meat. **J. Assoc. Publ. Anal.** 23(3); 1985; 93-8

Poultry

1855 HOBSON-FROHOCK (A). Determination of medicinal additives in poultry tissue. **J. Assoc. Publ. Anal.** 23(3); 1985; 83-91

Turkeys

1856 GREY (TC), ROBINSON (D) and JONES (JM). Some factors which may influence the variation in proximate composition and nitrogen factor of turkey muscle. **J. Assoc. Publ. Anal.** 23(3); 1985; 77-81

Egg

1857 GOLDSMITH (SM) and TOLEDO (RT). Kinetics of heat coagulation of egg albumin determined by water binding and rheological measurements. **J.Food Process. Presrv.** 9(4); 1985; 241-51

Dynamic testing of heat coagulated egg albumin revealed that phase angle, a measure of the fluidity of a viscoelastic material, exhibits a first order change during heating in a similar manner as the changes in the spin-lattice relaxation time (T1) of water protons measured by a pulsed nuclear magnetic resonance instrument. The absolute modulus, on the other hand, which is an index of the elastic properties exhibited a zero order change in a similar manner as the development of gel strength measured by constant rate penetrometry using an Instron universal testing instrument. Arrhenius activation energy of 29 kcal/mole for the phase angle and 38.9 kcal/mole for the aboslute modulus indicate that the process of protein-water interaction to immobilize water within the gel and that of protein-protein interaction to form the solid gel network occur simultaneously during heating, but they proceed by different mechanisms with the latter process showing greater heat sensitivity. AA

1858 WOLZAK (A), PEARSON (AM), COLEMAN (TH),PESTKA (JJ) and GRAY (JI). Aflatoxin deposition and clearance in the eggs of laying hens. **Food Chem. Toxicol.** 23(12); 1985; 1057-61

Levels of aflatoxins and their metabolites carried over to eggs of laying hens fed an aflatoxin-contaminated diet were studied and the length of time required to achieve clearance after removal of the aflatoxins from the diet. Results suggested that only small fraction of aflatoxin consumed is carried over to eggs thus posing little or no potential health hazard. Further, aflatoxin residues in eggs rapidly decrease after withdrawal of the contaminated diet and the clearance was achieved within 3-4 days from whole egg or egg white or within 6-7 days from egg yolk. MVG

SEAFOODS

1859 RAO (SN). Standards and systems in vogue for quality control and preshipment inspection of marine products. A review. **Indian Food Ind.** 4(4); 1985; 139-41

Discusses: Standards for preshipment inspection; in-process quality control; modified system of in-process quality control; and

suggestions of task force on quality control and preshipment inspection. BSN

1860 SUGITA (H) and DEGUCHI (Y). Evaluation of the media for the isolation of anaerobic bacteria from freshwater environments. **Bull. Jpn. Soc. Sci. Fish.** 51(12); 1985; 2081

The result shows that total viable counts of obligate anaerobes could not be obtained from results of a single medium and that the combination of some agar is necessary for the isolation of the obligate anaerobes from fresh water samples. The choice of the medium should be preferred according to the target organisms. KAR

1861 BURNS (BG) and KE (PJ). Liquid chromatographic determination of hypoxanthine content in fish tissue. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 444-8

Fish

1862 SZEFER (P) and FALANDYSZ (J). Trace metals in muscle tissue of fish taken from the Southern Baltic. **Z. Lebensmittel Unters. Forsch.** 181(3); 1985; 217-20

The determination of Fe, Mn, Ni, Pb, Cu, Co, Zn and Cd was investigated on 123 samples of muscle tissue of cod, herring, sprat and some other species of fish caught in 1981 in the southern Baltic Sea. The ranges and mean levels of metals recorded in this paper are compared with values reported previously by other authors for cod, herring and sprat from different regions of the Baltic Sea. The correlation coefficients between the metal concentrations in cod and herring muscles were calculated. The species-dependent changes of some metals in species analysed were observed. AA

1863 VALDIMARSSON (G), EINARSSON (H) and KING (FJ). Detection of parasites in fish muscle by candling technique. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 549-51

Optimum conditions for detecting cod worms in skinned cod fillets have been investigated. Maximum lighting conditions, reducing operator fatigue, retaining natural fillet colour and having a high contrast between parasites and fish flesh contrbute for the high efficiency of the candling technique proposed. BSN

1864 SALFI (V), FUCETOLA (F) and ARATA (P). Optimized procedures of biochemical analysis for differentiation between fresh and frozen-thawed fish products. I. Test of mitochondrial aspartate aminotransferase. **Ind. Aliment.** 24(9); 1985; 701-3 (Italian)

An electrophoretic method for the differentiation of fresh and frozen-thawed fish muscle has been described. The method has been applied to 6 species of fresh-water fish and 16 species of marine fish. The extract from fresh fish muscle gave a single electrophoretic AST band related to the sarcoplasmic isozyme, while the extract from the frozen-thawed muscle gave, in addition to the one obtained with fresh fish muscle one or more AST bands, characterized by a slow anodic migration (mitochondrial isoforms). The results are similar tothose obtained by Hamm & Kormandy (1969) for beef and pork muscle. KMD

1865 LANIER (TC). Surimi: Building block of formulated foods. **Activities Rep. R & D Assoc.** 37(2); 1985; 12-5

A brief discussion on gelation in formulated foods and surimi (fish protein) as the ultimate gelling protein. BSN

Rainbow trout

1866 PLAKAS (SM), LEE (T-C) and WOLKE (RE). Absence of overt toxicity from feeding the flavonol, quercetin, to rainbow trout (**Salmo gairdneri**). **Food Chem. Toxicol.** 23(12); 1985; 1077-80

The toxicity of the plant flavonol, quercetin, to rainbow trout (**Salmo gairdneri**) was investigated. Quercetin, which had been confirmed to be mutagenic in the Ames Salmonella/manmalian microsome test, was fed to trout at levels of 1 or 5% in the diet for 8 months. Survival, growth and feed conversion efficiency, selected haematological parameters and the relative weights of heart, liver and spleen were unaffected by the ingestion of quercetin, and there were no histopathological changes in any of the tissues examined. AA

Tunas

1867 CHOW (C-J), OCHIAI (Y) and HASHIMOTO (K). Effects of freezing and thawing on the autoxidation of bluefin tuna myoglobin. **Bull. Jpn. Soc. Sci. Fish.** 51(12); 1985; 2073-8

Myoglobin (Mb) was isolated from the dark muscle of bluefin tuna **Thunnus thynnus** by Sephadex G-75 gel filtration and CM-Sephadex C-50 ion-exchange chromatography. This Mb was dissolved in 50 mM phosphate buffers of several pH values, and examined for the rate of autoxidation(met Mb formation) under various conditions of freezing and thawing. When frozen quickly and kept at -80 C for 2 hours and then thawed, the Mb solution at pH 6.5 gave rise to a metMb formation rate of 5-15%, whereas the solutions at lower or higher pH values gave much higher rates of up to 70-80%. In contrast, metMb formation exceeded 80% regardless of pH values when frozen slowly at -20 C and then thawed after 20 hours. Thawing temperatures (0-20 C) affected the autoxidation rate of Mb to a less extent although with higher temperature the metMb formation was slower. AA

Mussel

1868 SOLCHAGA (M), GUARDIA (M de la), MONTORO (R), PASCUAL (MC) and LOPEZ-CAPONT (F). Cadmium, copper, iron, lead and zinc content in several parts of mussel (**Mytilus edulis** L.) from "Rias Bajas gallegas" (Spain). **Rev. Agroquim. Technol. Aliment.** 25(3); 1985; 409-16 (Spanish)

Cd, Cu, Fe, Pb and Zn content were determined by flame atomic absorption spectroscopy, in 196 samples of gill, mantle, foot and digestive system of mussel from rias of Arosa and Muros-Noya (Galicia, Spain). The metallic elements accumulated in gill and digestive system, whereas a lower content was found in mantle and foot. The content in metallic elements of total mussel from this area, at the date of the sampling (1981 and 1982), was lower than the maximum level tolerated by the Spanish laws. AA

Squids

1869 HAARD (NF) and ARCILLA (R). Precursors of Maillard browning in Atlantic short finned squid. **Can. Inst. Food Sci. Technol. J.** 18(4); 1985; 326-31

PROTEIN FOODS

1870 LANDEN (WO) JR., HINES (DM), HAMILL (TW), MARTIN (JI), YOUNG (ER), EITENMILLER (RR) and SOLIMAN (AGM). Vitamin E and vitamin A content of infant formulas produced in the United States. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 509-11

1871 TANNER (JT) and BARNETT (SA). Methods of analysis for infant formula: Food and Drug Administration and Infant Formula Council: collaborative study. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 514-22

FRUIT JUICES AND BEVERAGES

Fruit juices

1872 BEREZOVSKY (N). Future fruit juice technology. Review. **Confructa.** 29(3); 1985; 185-90

1873 BUCHNER (N). Hypa-S. An innovative packaging system for high-quality fruit juices. **Confructa.** 29(3); 1985; 243-54

1874 GEISS (H) and FUCHS (G). Liquid products in large-size containers. **Confructa.** 29(3); 1985; 218-29

Orange juices

1875 LAFUENTE (B). Factors that affect the quality and stability of semi-processed orange juice. **Rev. Agroquim. Technol. Aliment.** 25(3); 1985; 34-54 (Spanish)

The authors has reviewed recent work done at the Institute of Agro-Chemistry and Food Technology, Valencia (Spain) on the preservation of orange juice by SO_2 and on recovery of aroma from the juice. Semi-preserved orange juice of this type is very useful for the preparation of soft drinks. Finally, the author has also examined the factors which affect the quality and stability of concentrated orange juice during storage at low temperatures. The advantages of superconcentrates (60-65° Brix), with recovered aromas, over the traditional cut-back, frozen concentrates have been indicated. KMD

1876 BIELIG (H-J), FAETHE (W), KOCH (J), WALLRAUCH (S) and WUCHERPFENNIG (K). Standard values and ranges of specific reference numbers for orange juice and grapefruit juice. **Confructa.** 29(3); 1985; 191-206

1877 BUTLER (D). Citrus concentrates. **Confructa.** 29(3); 1985; 208-8 (German)

The production of forzen concentrated orange juice (fcoj) in Brazil has been compared with that in Florida. Imports and consumption of fcoj and grapefruit juice in the EEC countries and in the USA have also been reported in the form of tables. Price fluctuations on the Brazilian market in recent years have been discussed. KMD

Coffee

1878 ENGELHARDT (UH) and MAIER (HG). The acids of coffee XII. The contribution of individual acids to the sourtaste. **Z. Lebensmittel Unters. Forsch.** 181(3); 1985; 206-9 (German)

The contribution of 20 acids to the titratable acidity (pH 6) of brewed coffee and of 22 acids to those of instant coffees were calculated. The titratable acidity has good correlation with the intensity of the sourtaste of coffee beverages. The 22 acids contribute 93% (roast coffee) and 75% (instant coffee) to the titratable acidity of the beverage. In the first place as contributors are acetic acid (29% in roast coffee, 22% in instant coffee) and citric acid respectively (26%/20%). Only citric acid is present above its threshold value for sour taste in roast coffee beverages while acetic acid nearly reaches its threshold value. The high molecular weight acids (17%/14%) and malic acid (8%/6%) also participate appreciatly as contributors to

acidity. All other acids have percentage shares below 3% each, but they probably also contribute to the sour taste of coffee beverages. AA

1879 VANOS (V) and BINDSCHEDLER (O). The microbiology of instant coffee. Food Microbiol. 2(3); 1985; 187-97
Lactic acid bacteria were predominant microflora with lactobacilli as the major group of **L. plantarum** as the dominant species. Total inhibition of growth was observed at 15 mg/ml of pure caffeine solution and at 60% total solids of non decaffeinated coffee. Coffee liquor was found to be not a suitable medium for growth of pathogenic bacteria. **Saccharomyces cerevisiae** was not inactivated in coffee liquor. KAR

Beer

1880 NORRIS (K) and LEWIS (MJ). Application of a commercial barley beta-amylase in brewing. **MBAA** Tech. Quart. 22(4); 1985; 154-8

Worts

1881 TENNEY (RI). Rationale of the brewery fermentation. **MBAA Techn. Quart.** 22(4); 1985; 115-8
Discusses: wort composition; yeast selection and handling; methods of accelerating fermentation; influence of tank design;and future. BSN

1882 FERNANDEZ (S), MACHUCA (N), GONZALEZ (MG) and SIERRA (JA). Accelerated fermentation of high-gravity worts and its effect on yeast performance. **MBAA** Techn. Quart. 22(4); 1985; 167-71

Brewer's yeast

1883 STEWART (GG). New developments in ethanol fermentation. **MBAA Techn. Quart.** 22(4); 1985; 119-23
A brief discussion on brewer's yeast strains; sugar uptake and low carbohydrate (low calorie) beer.BSN

1884 RYDER (DS) and MASSCHELEIN (CA). The growth process of brewing yeast and the biotechnological challenge. **MBAA Techn. Quart.** 22(4); 1985; 124-32

1885 CASEY (GP) and INGLEDEW (WM). Reevaluation of alcohol synthesis and tolerance in brewer's yeast. **MBAA** Techn. Quart. 22(4); 1985; 133-41
Discusses: Defining ethanol tolerance; mechanisms of ethanol toxicity; and ethanol tolerance. BSN

1886 RUSSELL (I) and STEWART (GG). Valuable techniques in the genetic manipulation of industries yeast strains. **MBAA** Techn. Quart. 22(4); 1985; 142-8
Discusses: hybridization; rare mating and zymocidal activity; mutation; spheroplast (protoplast fusion) and transofrmation; liposome-mediated transformation and future prospects. BSN

1887 KNUDSEN (FB). Fermentation variables and their control. **MBAA** Techn. Quart. 22(4); 1985; 149-53
Discusses: Yeast strain and purity; yeast propagation and handling; yeast pitching; yeast viability, suspension/flocculation and crop: contamination; temperature; pressure; and agitation. BSN

1888 HSU (W-P) and BERNSTEIN (L). A new type of bioreactor employing immobilized yeast. **MBAA** Techn. Quart. 22(4); 1985; 159-61

1889 SIGSGAARD (P) and RASMUSSEN (JN). Screening of the brewing performance of new yeast strains. **MBAA Tech. Quart.** 22(4); 1985; 162-6

1890 McCAIG (R) and BENDIAK (DS). Yeast handling studies. I. Agitation of stored pitching yeast. **MBAA Techn. Quart.** 22(4); 1985; 172-5

1891 McCAIG (R) and BENDIAK (DS). Yeast handling studies. II. Temperature of storage of pitching yeast. **MBAA Techn. Quart.** 22(4); 1985; 177-80

Wine

1892 MARTIN (GE), KRUEGER (HW) and BURGGRAFF (JM). Radiocarbon 14 C differentiation of sparkling and carbonated wines. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 440-43

OILS AND FATS

Cottonseed oils

1893 YAZICIOGLU (T) and WETHERILT (H). A study on the composition of cottonseed varieties grown in Turkey and the characteristics of their oils. **Fette Seifen Anstrichm.** 87(9); 1985; 366-9

Groundnut oils

1894 APPAIAH (KM), SREENIVASA (MA), KAPUR (OP) and NAGARAJA (KV). Laboratory studies on the effect of refining of groundnut oil on sumithion residues. **J. Food Sci. Technol. (India)** 22(6); 1985; 419-20

Oil was extracted from groundnut (**Arachis hypogaea**) seeds sprayed with sumithion at 5, 10 and 20 mg/kg. The effect of refining stages of groundnut oil (neutralization, bleaching, acid deodourization) in the laboratory on the Sumithion (0,0-dimethyl 0-(3-methyl-4-nitrophenyl)phosphorothioate) content of groundnut oil was studied. The loss of sumithion during neutralization of the oil was 2.5% which increased on bleaching to 22.5% and steam distillation to 75%. KAR

Rapeseed oils

1895 THIES (W). Determination of the glucosinolate content in commercial rapeseed loads with a pocket reflectometer. **Fette Seifen Anstrichm.** 87(9); 1985; 347-50

A method is proposed which allows the determination of the glucosinolate content in commercial loads of rapeseed within 10 minutes. The procedure is based on the following steps: Homogenization of 10 g seeds, extraction of the glucosinolates with boiling water, enzymatic hydrolysis of the glucosinolates, removal of interfering substances with activated charcoal paper, detection of the liberated glucose using a glucose test paper, measurement of the colour intensity of the test paper with a pocket reflectometer and calculation of the glucosinolate content on basis of the measured values. AA

Soybean oils

1896 ADHIKARI (S) and ADHIKARI (J). Stability during storage and deep fat frying of Indian soybean oil. **Indian Food Ind.** 4(4); 1985; 155-61

Indian soy oil contained a lower level of linolenic acid (3.7-6.0%) against American soya oil (8-11%) which is expected to impart higher stability. Detailed stability studies were conducted with and without antioxidants by (i) Schaal oven test (ii) AOM test (iii)

normal storage. It was observed that RBD Indian soy oil could be stored for 50-55 days without antioxidant and with 0.01% TBHQ, the storage period can be elevated to nearly-one year. Onset of off flavour as well as colour bleach end point was observed as a check of rancidity. Stability studies on solvent extracted, unrefined oils by AOM test indicate considerably greater stability than an RBD product, propyl gallate extended crude SBO life only slightlybut TBHQ (0.02%) conferred about a three fold protection. Deep fat frying properties were investigated by frying potato chips batchwise for 36 hours. The oil deterioration was followed by measuring AV, POV, colour, total polar material (TPM) etc. Particular emphasis was laid on TPM content which is acknowledged now-a-days as one of the most reliable measures for following the rate of oil degradation. It was indicated that in terms of the analytical parameters, RBDESBO and GNO behaved in a well comparable manner. The room odour was found to be greatly improved when 0.01% citric acid was incorporated during cooling side of deodorisation. AA

Fats

1897 SEHER (A) and ARENS (M). Survey by a working party of the DGF, 91th report: German standard methods for investigation of fats, fatty products and related materials, 68th report: Analysis of fats XX. **Fette Seifen Anstrichm.** 87(9); 1985; 342-5 (German)

1898 GERE (A), SEBEDIO (JL) and GRANDGIRARD (A). Studies on some Hungarian fats and oils obtained from commercial frying processes. **Fette Seifen Anstrichm.** 87(9); 1985; 359-62

Commercial frying oil and fat samples (lard and sunflower) were collected during a survey on operating conditions and quality of frying fats, conducted in Hungary. The major fatty acids as well as some important types of alteration products (polar components, polymers and cyclic fatty acid monomers) were determined in eachsample. The contents of the polar components ranged from 6.8 to 24.4% for the lard samples and from 4.4 to 49.9% for the sunflower oil samples. Values for polymers ranged from 1.0 to 1.5% for the lard smaples and from 3.5 to 21.5% for the sunflower oil samples. Only minor amounts of cyclic monomers were found in both types of fats (ranging from 0.03 to 0.16%). The most abused sunflower oil and lard samples were fractionated into their main groups of components and the percentages of the different frying fat constituents were determined. AA

1899 deMAN (JM), MOSTAFA (AN) and SMITH (AK). Thermal analysis microscopy for the study of phase changes in fats. **Food Microstruct.** 4(2); 1985; 233-9

An investigation was carried out using the Mettler FP800 Thermosystem to study polymorphic transitions of several monoacid triglycerides and hydrogenated Canola oil. The system includes a central processing unit connected with a thermal microscopy hot stage that allows the measurement of heat flow to the sample. Scanning electron microscopy was also used to examine the same samples after osmium tetroxide fixation. The results obtained relate phase transitions occurring during heating and cooling with the morphology of the various crystal structures. AA

1900 BUCHHEIM (W), BARFOD (NM) and KROG (N). Relation between microstructure, destablizatio phenomena and rheological properties of whippable emulsions. **Food Microstruct.** 4(2); 1985; 221-32

The structure of spray-dried whippable emulsions (toppings) containing different types of lipid surfactants, was investigated by electron microscopy using the freeze-fracture technique. The size distribution of the lipid particles within the powders varied with the

type of the surfactant used. After reconstitution of the topping powders in water, a strong destabilization phenomenon took place to an extent depending on the type of the surfactant. Simultaneously a crystallization of coalesced lipid particles occurred along with an increase in viscosity of the emulsions. The degree of crystallization was measured by p-NMPR. It has been concluded that these phenomena are closely related to whippability and foam firmness. The structure of whipped topping emulsions (foam) is characterized by the presence of large lipid crystals at the surface of air bubbles. This structure is different from the structure of whipped liquid (imitation) cream or dairy cream, where the air bubbles are predominantly stabilized by agglomerated fat globules from which the surface membrane has been partly removed during the whipping process. AA

1901 CHRISTIE (WW). Chromatographic analysis of phospholipids. Z. Lebensmittel Unters. Forsch. 181(3); 1985: 171-82

Cocoa butter

1902 HICKLIN (JD), JEWELL (GG) and HEATHCOCK (JF). Combining microscopy and physical techniques in the study of cocoa butter polymorphs and vegetable fat blends. Food Microstruct. 4(2); 1985; 241-8

Transmission electron microscopy, differential scanning calorimetry and X-ray diffraction have been used to study the cocoa butter polymorphs and blends of cocoa butter with a hydrogenated vegetable fat. The results indicate the presence of six polymorphs and confirm observations made by other workers. Vegetable fat addition affects both the molecular structure and the morphology of the crystals observed. After temperature cycling, a blend containing 50% vegetable fat developed two crystals types and differences in the X-ray pattern were apparent. Correlations could be made between the known molecular structure and the morphology observed in most of the polymorphs. In selected cases, and particularly the blends containing vegetable fat, knowledge of the polymorphic form did not always enable an accurate prediction of morphology. AA

1903 MANNING (DM) and DIMICK (PS). Crystal morphology of cocoa butter. Food Microstruct. 4A(2); 1985; 249-65

Polymorphic characteristics and composition of cocoa butter from Theobroma cacao has been reviewed. Common fat behaviour relative to tempering and bloom formation has been discussed. Thermal and compositional patterns of cocoa butter crystallisation indicates that a high melting crystal seed forms which promotes solidification of additional quantities of less stable triglycerides. The visual defining of crystal forms during crystallisation was aided by scanning electron microscopy and polarised light microscopy. MVG

Margarines

1904 DRUCKREY (F), HOY (CE) and HOLMER (G). Fatty acid compositor of Danish margarines. Fette Seifen Anstrichm. 87(9); 1985; 350-55 (German)

Three groups, including a total of 30 Danish margarines containing at least 10%, 20%, or 40% of linoleic acid, respectively, were analyzed by gas-liquid chromatography using both a 50m Sil 88 capillary column and two packed columns. SP 2330 and OV-275. The total contents of trans fatty acids ranged as follows; 3.1%-29.0%, 2.9%-18.3%, and 2.6%-8.3%, respectively, for the three groups. Only in low linoleic acid margarines significant levels of C 20- and C 22-monoenes were found, indicating that these margarines contained partially hydrogenated marine oils. In all samples, the content of trans, trans linoleic acid was less than 1%. AA

SPICES AND CONDIMENTS

Nil

SENSORY EVALUATION

1905 McBRIDE (RL). Sensory measurement: An introductory overview. CSIRO Food Res. Q. 45(3); 1985; 59-63

Aspects discussed in this overview include the rating scale, the JND scale, the magnitude scale and the validity of scale. KAR

FOOD STORAGE

1906 BHATIA (K). Preservation of perishables in rural storages. **Indian Food Ind.** 4(4); 1985; 148-9

Discusses: Metabolism of plant products; low temperature-high humidity storage; and controlled atmosphere storage. BSN

INFESTATION CONTROL AND PESTICIDES

1907 DIKSHIT (AK) and MUKHERJEE (SK). Pesticide formulation industry in India. **Pesticides.** 19(11); 1985; 23-6

Discusses: Brief history of pesticide industry; pesticide formulation; dust bases; wettable powders, granules; emulsifiable concentrates; oil solutions; aqueous concentrates; aerosols; raw materials; for pesticide formulations available in India; import, capacity utilization and distribution; export; machinery; quality control aspect; and role of small scale sector. BSN

1908 JEFFUS (MT) and STEWART (JG). Formulas for calculation of extraction volumes for commonly used pesticide residue extraction procedures. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 437-9

1909 SARKAR (A). Investigation of some organophosphorus compounds having pesticidal activity: Synthesis, insecticidal activity, toxicity, anti-cholinesterase activity, and phytotoxicity of O,O,O′O′,-tetra-(β-methoxy)ethyl-S, S′-ethylene-bis-phospho- rodithioate. **Pesticides.** 19(11): 1985; 39-41

1910 STRATTON (GW). The influence of solvent type on solvent-pesticide interactions in bioassays. **Arch. Environ. Contam. Toxicol.** 14(6); 1985; 651-8

BIOCHEMISTRY AND NUTRITION

1911 VAESSEN (HAMG), OOIK (A Van) and ZUYDENDORP (J). Simple fluorimetric determination of selenium in food and biological materials. **A. Z. Lebensmittel. Unters. Forsch.** 181(3); 1985; 189-93

1912 KATIYAR (SK), KUMAR (N), BHATIA (AK) and ATAL (CK). Nutritional quality of edible leaves of some wild plants of Himalayas and culinary practices adopted for their processing. J. Food Sci. Technol. (India).

22(6); 1985; 438-40
North-West Himalayan region people consume certain edible leaves (Allium caroliniamum, Amaranthus polygamus, Chenopodium album, Chenopodium botrys, Capparis spinosa, Origanum vulgare, Fagopyrum esculentum, Nymphaea alba, Portulaca oleracea, Lactuca serriola, Sedum tibeticum, Lepidium latifolium and Urtica hyperborea) as such or after processing. Chemical constituents of these leaves (ash, crude protein, ether extractives, total soluble sugars, starch, total carbohydrates, Ca, Fe, P) and culinary practices commonly followed for their cooking are given. KAR

1913 ALAM (N), SRIVASTAVA (AK) and GUPTA (PC). Structure of a water-soluble galactomannan from seeds of **Cassia laevigata**. **J. Indian Chem. Soc.** 62(10); 1985; 768-70

1914 IHEKORONYE (AI). Quantitative gas-liquid chromatography of amino acids in enzymic hydrolysates of food proteins. **J. Sci. Food Agric.** 36(10); 1985; 1004-12
A method is described for analysing amino acids released from food proteins by the combined, but sequential action of papain and pronase E. Amino acids liberated were analysed by gas-liquid chromatography as their N-trifluoroacetyl n-butyl esters. Prior to proteolysis, presolubilisation of the proteins was achieved in 0.05M HCl. Of over 30 different food proteins analysed, more tham 90% of the total nitrogen was recovered showing that the process achieved virtually complete enzyme hydrolysis with little destruction of amino acids. There was also good agreement between values from gas-liquid chromatography, cation-exchange (CIE) analysis of enzymic hydrolysates and CIE analysis of acid, performic acid and alkaline hydrolysates. KAR

1915 HEGSTED (DM). Nutrition: The changing scene. **Nutr. Rev.** 43(12); 1985; 357-67
Discusses: Early years; the vitamin era; study of nutritional requirements; nutrition science and the chronic disease; observation and experimentation; public health nutrition and prevention; limits of epidemiology; and future of nutrition research. BSN

TISSUE CULTURE

Nil

TOXICOLOGY AND HYGIENE

1916 ZAKOVA (N), ZAK (F), FROEHLICH (E) and HESS (R). Evaluation of skin carcinogenicity of technical 2,2-Bis-(p-glycidyloxyphenyl)-propane in CFI mice. **Food Chem. Toxicol.** 23(12); 1985; 1081-9

1917 ANDERSON (D) and PHILLIPS (BJ). Nitrofurazone-genotoxicity studies in mammalian cells **in vitro** and **in vivo**. **Food Chem. Toxicol.** 23(12); 1985; 1091-8

1918 HEIKES (DL). Purge and trap method for determination of ethylene dibromide in table-ready foods. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 431-6

1919 BAI (Q-Y) and LIU (CW). Improved cleanup for gas chromatographic determination of propiconazole residues in soil, wheat grain, straw and leaves. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 602-4

1920 NORRED (WP), MORRISSEY (RE), RILEY (RT), COLE (RJ) and DORNER (JW). Distribution, excretion and skeletal muscle effects of the mycotoxin (14C) cyclopiazonic acid in rats. **Food Chem. Toxicol.** 23(12); 1985; 1069-76

1921 BALDWIN (S) and PARKER (RS). Effects of dietary fat level and aflatoxin B1 treatment on rat hepatic lipid composition. **Food Chem. Toxicol.** 23(12); 1985; 1049-55

Alterations in hepatic lipid composition in a rat strain commonly used for the investigation of dietary lipid effects on hepatocarcinogenesis were studied. Aflatoxin B1 was administered in a regime known to produce liver tumours, with corn oil being the source of dietary fat. Both persistant and transient changes in hepatic lipid composition were observed. For example, certain early changes in total lipid and free cholesterol disappeared by 13th week while others, such as total and esterified cholesterol, were still apparent at this time. In addition, interactive effects of high dietary fat levels and aflatoxin B_1 on the ratio of 20:4 to 18:2 in hepatic phosphatidylcholine and phosphatidylethanolamine were transient, while the influence of dietary fat on this ratio was still visible at 13th week. MVG

1922 KAMIMURA (H), NISHIJIMA (M), YASUDA (K), USHIYAMA (H), TABATA (S), MATSUMOTO (S) and NISHIMA (T). Simple, rapid cleanup method for analysis of aflatoxins and comparison with various methods. **J. Assoc. Off. Anal. Chem.** 68(3); 1985; 458-61

1923 MALLETT (AK), ROWLAND (IR), BEARNE (CA), PURCHASE (R) and GANGOLLI (SD). Metabolic adaptation of rat faecal microflora to cyclamate **in vitro. Food Chem. Toxicol.** 23(12); 1985; 1029-34

The presence of cyclamate-metabolising activity in the rat intestinal flora has been investigated in vitro. The time course for the appearance of sulphumatase activity with parallel changes in bacterial numbers, diversity of microbial species and enzyme complement are also reported. MVG

1924 BRADLAW (JA), SWENTZEL (KC), ALTERMAN (E) and HAUSWIRTH (JW). Evaluation of purified 4-deoxynivalenol (vomitoxin) for unscheduled DNA synthesis in the primary rat hepatocyte-DNA repair assay. **Food Chem. Toxicol.** 23(12); 1985; 1063-7

1925 MACGREGOR (JT), WILSON (RE), NEFF (WE) and FRANKEL (EN). Mutagenicity tests of lipid oxidation products in **Salmonella typhimurium:** Monohydroperoxides and secondary oxidation products of methyl linoleate and methyl linolenate. **Food Chem. Toxicol.** 23(12); 1985; 1041-7

Nine hydroperoxy and hydroperoxy-epidoxy oxidation products which were shown to be formed from either autoxidation or photosensitised oxidation of methyl linoleate and methyl linolenate showed week mutagenic response even at relatively high levels. As under conditions of food use, oxidation is associated with much lower peroxide values, usually lower than 10. Thus the results presented here suggest no marked genotoxic potential due to occurrence of these compounds in dietary fats. MVG

1926 BOUTIN (BK), REYES (AL), PEELER (JT) and TWEDT (RM). Effect of temperature and suspending vehicle on survival of **Vibrio parahaemolyticus** and **Vibrio vulnificus. J. Food Prot.** 48(12); 1985; 875-8

1927 PUTTALINGAMMA (V), LEELA (RK) and SANKARAN (R). The changing profile of microbial quality in the city water supply. **J. Food Sci. Technol. (India)** 22(6); 1985; 391-3

This study was carried out for one year on the incidence and distribution of different types of bacteria present in Mysore municipal water supply from five selected localities. Enterobacter and Pseudomonas are present in large numbers in samples collected from all sources. There was lot of fluctuation in the number and types of bacteria present in the various sources. Immediately after the rains, the water became turbid and the number of bacteria present increased with increasing turbidity. Gram negatives were always the highest with coliforms contributing the major portion. Some of the members identified were opportunistic pathogens. KAR

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Regd. No. 36729/84

Printed and Published by Dr. B. L. Amla, Director, Central Food Technological Research Institute, Mysore 570 013 at C.F.T.R.I. Offset Printing Unit. Editor : Shri S. V. Sangameswaran, C.F.T.R.I. Mysore